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SALMON FISHERIES IN THE YUKON AREA, ALASKA, 1997

A Report to the Alaska Board of Fisheries

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INTRODUCTION

The Yukon Area includes all waters of the Yukon River drainage in Alaska and coastal waters from Point Romanof, north of Kotlik, to the Naskonat Peninsula. For management purposes, the Yukon Area is divided into seven districts and ten subdistricts (Figure 1). Commercial fishing is allowed along the entire 1,224 miles of the Yukon River in Alaska, and in the lower 225 miles of the Tanana River. The Coastal District includes the majority of the coastal marine waters within the Yukon Area and is only open to subsistence fishing. The Lower Yukon Area, Districts 1, 2, and 3, includes coastal waters of the delta and that portion of the Yukon River drainage downstream of Old Paradise Village (river mile 301). The Upper Yukon Area, Districts 4, 5, and 6, is the Alaskan portion of the Yukon River drainage upstream of Old Paradise Village. Commercial, Aboriginal, domestic, and sport salmon fisheries also occur in Canada, with fishery management activities conducted by the Canadian Department of Fisheries and Oceans (DFO).

Chinook, sockeye, coho, pink, and chum salmon occur in the Yukon River. The chum salmon return is made up of an earlier and more abundant summer chum salmon run and a later fall chum salmon run. Chinook and summer chum salmon generally begin entering the river during late May or early June. The chinook salmon migration has usually passed through the lower river by the second week of July, while the summer chum salmon migration continues until mid-July. Fall chum salmon generally begin entry into the Yukon River by the middle of July and are present into September. Coho salmon generally begin entering the river during the first week of August with entry continuing into September. Pink salmon are abundant only in even-numbered years. Historically, exploitation of pink salmon in both commercial and subsistence fisheries is very low due to their advanced stage of maturity, and the presence of other, more desirable species. Sockeye salmon are rare in the drainage.

DESCRIPTION OF FISHERIES, MANAGEMENT AND REGULATIONS

The overall goal of the department's program is to manage the various salmon runs for sustained yield under the policies and regulations established by the Alaska Board of Fisheries. Management of the Yukon Area commercial salmon fishery is complex due to the inability to determine stock specific abundance and timing, the high efficiency of the commercial fleet, and allocation issues. Based on current knowledge, it is impossible to manage individual stocks independently. Current escapement goals in the Yukon River drainage are based, in part, on historic escapements to key index spawning areas. In most cases, the average historic escapement level for a base period for each index area is considered a minimum escapement goal to be achieved. While escapement levels that produce maximum sustained yield may not be known, the escapement goals are intended to sustain the average historical catch in the fisheries.

Research and management projects are underway, and additional studies are planned, should additional funding become available, to obtain the biological information necessary for more precise management of the salmon runs. Projects conducted in 1997 are listed in Appendix A.1 and include: chinook salmon stock identification studies using scale pattern analysis, main-river sonar

operation near Pilot Station to obtain total salmon passage estimates, assessment of spawning escapements in selected tributaries, and test fishing projects in the Yukon River delta, in the Yukon River mainstem near the village of Tanana, and in the Tanana River to provide inseason run timing and relative abundance information.

Subsistence Fishery

Subsistence salmon fishing in the Yukon River drainage has a long history. A combined population of approximately 11,700 people of primarily Yupik Eskimo and Athabaskan Indian descent are located within 40 communities of the Yukon Area, excluding the greater Fairbanks area with a population of 82,000 in 1996. Approximately 1,400 households harvest salmon for subsistence use in the drainage.

Subsistence fishing occurs throughout most of the Yukon Area and has the highest priority among uses of the resource. Subsistence salmon fishing occurs from late May through October, although this varies throughout the drainage. Subsistence salmon fishing is often undertaken by extended family groups representing two or more households in a community. These groups, as well as members of individual households, cooperate to harvest, cut, dry, smoke, and store salmon for subsistence use. Many people who fish for subsistence salmon also are commercial fishers.

In order to enforce commercial salmon fishing regulations, it is necessary to place some restrictions on the subsistence fishery. For example, subsistence salmon fishing is closed in most areas for 24 hours prior to the commercial salmon season. This regulation discourages illegal activities such as selling subsistence caught salmon or salmon roe commercially. However, substantially more fishing time is allowed throughout the fishing season for subsistence than for commercial purposes. Prior to and following the commercial fishing season, subsistence fishing is allowed seven days per week in Districts 1 through 5 (except for Subdistrict 5-A following the commercial season), and for two 42-hour periods per week in Subdistricts 6-A (except for the Kantishna River drainage), 6-B (except for the Old Minto Area) and 6-C. Since the early 1960s subsistence fishing has been generally managed and regulated to coincide with commercial salmon fishing periods when the commercial fishing season is open. Additional subsistence only fishing time may also be allowed. Regulations adopted in 1993 and 1994 separate subsistence and commercial fishing periods in Districts 1, 2, 3 and Subdistrict 4-A. By regulation, subsistence salmon fishing opens 12 hours after the closure of a commercial period and ends 18 hours before the start of the next commercial opening in these areas.

Gillnets, beach seines, and fish wheels are legal gear for subsistence salmon fishing in the Yukon Area. By regulation, the use of driftnets for subsistence fishing has been limited to the Lower Yukon Area and Subdistrict 4-A. **Proposals #159 and #160** are public proposals that would extend the use of drift gillnets for chinook salmon subsistence fishing to portions of Subdistricts 4-B and 4-C. In the Lower Yukon Area, set and drift gillnets are the dominant gear types. In the Upper Yukon Area, fish wheels and set gillnets are primarily used for subsistence fishing.

Subsistence fishing permits are required in three areas within the upper Yukon River drainage: 1) the Tanana River drainage excluding the Fairbanks Nonsubsistence Area; 2) the Yukon River between Hess Creek and Dall River; and 3) the Yukon River between the upstream mouth of Twenty-two Mile Slough and the U.S./Canada border.

In the Subdistrict 4-A summer chum salmon commercial fishery, fishers extract and sell roe from their catch and retain the carcasses for subsistence use. From 1980 through 1985, it is likely that many fishers reported a portion of their commercial harvest as subsistence fish. It is believed that the unmarketable carcasses may have simply replaced a large portion of the subsistence harvest in this area. Since 1988, subsistence surveys for the Yukon River drainage were conducted in such a manner as to estimate the number of summer chum salmon taken by commercially-related activities and those taken during subsistence only fishing activities.

Chinook salmon are utilized mainly for human consumption. Although chum and coho salmon are also used for human consumption, large numbers are taken to feed sled dogs. The practice of keeping sled dogs is much more prevalent in the Upper Yukon Area and it is considered a major factor affecting subsistence use.

Commercial Fishery

Commercial chinook salmon fishing in the Alaskan portion of the Yukon River dates back to 1918, but the present multi-species salmon fishery did not become fully developed until the mid-1970s. During the 1970s, fishing time was liberal with relatively low effort levels. In more recent years, commercial fishing time has been greatly reduced because of the high efficiency of the fleet.

There are two fishing seasons in the Yukon Area: the summer season, which targets chinook and summer chum salmon; and the fall season, which targets fall chum salmon with an incidental harvest of coho salmon. Legal commercial fishing gear consists of set and drift gillnets in the Lower Yukon Area, and fish wheels and set gillnets in the Upper Yukon Area. Open skiffs powered by outboard motors are typically used to operate fishing gear. Separate limited entry permits have been issued for the Upper and Lower Yukon Areas. There are 707 limited entry permits issued for the Lower Yukon Area and 241 limited entry permits issued for the Upper Yukon Area.

Primary tools used in the management of the commercial salmon fishery are guideline harvest ranges established by the board (Table 1) and emergency order authority. Emergency orders are used to open and close the commercial fishing seasons, establish fishing periods, and implement mesh size restrictions. Harvests near the midpoint of the guideline harvest ranges should be expected if the run is of average magnitude. In general, based upon evaluation of run abundance, the department attempts to manage the commercial fisheries such that each district's harvest is proportionately similar within their respective guideline harvest ranges. A basic management strategy is to spread out the harvest on the salmon runs in an effort to not over harvest any one segment of the return.

Management of the chinook and summer chum salmon runs is difficult because of the overlapping run timing of these species. In the Lower Yukon Area, mesh size restrictions (six inch maximum mesh size) may be implemented to direct the harvest toward summer chum salmon prior to, between, or after chinook salmon directed fishing periods (unrestricted mesh size).

Currently, there are no guideline harvest ranges established for coho salmon. Commercial coho salmon harvests are dependent on management actions taken for fall chum salmon.

Personal Use Fisheries

Regulations providing for personal use fisheries have been in effect sporadically in the Yukon Area since 1988. In general, personal use fisheries have not resulted in new additional harvests, rather these harvests were historically documented as subsistence harvests.

In 1995, the Joint Board of Fish and Game adopted regulations that created the Fairbanks Nonsubsistence Area (Figure 2). No subsistence fishing is allowed within non-subsistence areas. Subdistrict 6-C falls entirely within the Fairbanks Nonsubsistence Area and personal use salmon fishing permits are required. Since 1995, Subdistrict 6-C has been managed under personal use regulations. There is a fishery harvest limit in Subdistrict 6-C of 750 chinook, 5,000 summer chum, and 5,200 fall chum and coho salmon combined.

Sport Fisheries

In general, sport fish salmon harvests in the Yukon Area are relatively minor compared to commercial and subsistence harvests. The Tanana River drainage is the exception, as it supports a popular sport fishery. In 1988, the Board of Fisheries established a guideline harvest range of 300 to 700 chinook salmon for the Salcha River recreational fishery. In 1990, the Board established a guideline harvest range of 300 to 600 chinook salmon for the Chena River recreational fishery.

U.S./Canada Yukon River Salmon Panel and Treaty Negotiations

Negotiations were initiated in 1985 between the U.S. and Canada regarding a Yukon River salmon treaty. The purpose of these negotiations is to develop coordinated conservation and management between the U.S. and Canada for the salmon stocks that spawn in the Canadian portion of the Yukon River drainage.

In the mid-1990s, there was realization that, while reaching a comprehensive long term agreement remained a formidable challenge given some of the key unresolved issues, there would be benefits that could be realized by more formally implementing the areas of agreement to date. In February 1995, an interim Yukon River Salmon Agreement (Agreement) went into effect through an exchange of diplomatic notes. A U.S./Canada Yukon River Panel (Panel) was formed to implement the Agreement. The Panel consists of six United States members and six Canadian members. The Panel also administers a Yukon River Salmon Restoration and

Enhancement Fund (Fund). Both sides have to agree on an item before an action can be taken by the Panel. The U.S. side of the Panel consists of four Alaskan Yukon River drainage fishers, one Alaska State government official, and one U.S. federal government official. Each Panel member on the U.S. side has an alternate. There is an advisory group of Alaska Yukon River drainage fishers providing input to the U.S. side. A Joint Technical Committee (JTC) provides technical support to the Panel. The focus of the Panel is on the salmon stocks that spawn in the Canadian portion of the Yukon River drainage. The Panel makes recommendations to the management agencies in Alaska and Canada.

The Agreement is in place through 1997, with an option to extend if both sides so desire. There are a number of issues that remain to be resolved, and negotiations resumed in October 1997. The goal of the negotiations will be to reach a long-term agreement on the remaining issues and to incorporate the relevant elements of the Agreement.

The Panel held its inaugural meeting in Whitehorse, Yukon Territory, in April 1996. The Panel proceeded to address the work of jointly improving salmon stocks of common concern on the Yukon River. The Panel agreed to the first six years of a rebuilding plan for Canadian mainstem chinook salmon stocks. Recognizing the desirability of rebuilding stocks, the Panel agreed to an interim, minimum spawning escapement objective for Canadian mainstem Yukon River chinook salmon of 28,000 fish for six years beginning in 1996. The U.S. contribution to this effort is to endeavor to deliver 44,800 to 47,800 chinook salmon to the Canadian mainstem Yukon River. The Canadian contribution to this effort is to endeavor to manage the harvest of chinook salmon in the mainstem Yukon River drainage in Canada by all user groups combined within a guideline harvest range of 16,800 to 19,800 chinook salmon.

For Canadian Yukon River mainstem fall chum salmon, a 12-year rebuilding plan was agreed upon during the negotiation process beginning with the 1990 season. The objective of this plan is to rebuild the stock by achieving a spawning escapement of 80,000 or more fall chum salmon for all brood years in the cycle by the year 2001. The U.S. contribution to this effort is to endeavor to deliver to the Canadian border on the mainstem Yukon River an agreed to number of fall chum salmon, which varies by year based upon the rebuilding schedule. The Canadian contribution to this effort is to endeavor to manage the harvest of fall chum salmon in the mainstem Yukon River drainage in Canada by all user groups combined within a guideline harvest range of 23,600 to 32,600 fall chum salmon.

Given the prospect of a poor 1997 fall chum salmon return, the Panel began discussions on how to deal with this challenge at the November 1996 meeting of the Panel in Anchorage. As assigned, the Joint Technical Committee provided several options for consideration. At the March 1997 meeting in Whitehorse, the Panel agreed to a rebuilding step spawning escapement goal of 55,000 fall chum salmon for the Canadian mainstem Yukon River for 1997.

A key component of the Agreement is administration of the Fund by the Panel to address the restoration and enhancement of Canadian origin salmon stocks. The U.S. contributes $400,000 per year into the Fund. The Panel administers a call for proposals, and a review and decision-

making process. In March 1997, the Panel agreed to fund 17 projects with a total cost of $480,000. A call for proposals for 1998 projects has been completed and the review process is underway. The Panel will meet in the spring of 1998 to determine which projects to fund.

SUBSISTENCE AND PERSONAL USE SALMON HARVEST, 1997

The 1997 subsistence salmon harvest information is unavailable for inclusion in this report. In May, subsistence "catch calendars" were mailed to rural community households in non-permit portions of the Yukon River drainage in Alaska for use during the fishing season. Catch calendars are collected during the personal interviews that are conducted with fishermen immediately following the season in September, October, and November. Additionally, attempts are made to contact fishers by telephone or mail. Preliminary analysis of 1997 subsistence harvest data will not be completed until early 1998. The estimated 1996 subsistence salmon harvest in the Alaska portion of the Yukon River drainage totaled approximately 43,300 chinook, 102,500 summer chum, 128,900 fall chum, and 30,300 coho salmon. These estimates do not include coastal harvests from Hooper Bay and Scammon Bay and commercially-caught salmon carcasses retained for subsistence purposes. Table 2 shows the combined subsistence and personal use salmon harvest in 1996.

Preliminary personal use salmon harvest data compilation for the 1997 fishing season will not be completed until early 1998. In 1996, 129 fishermen were issued personal use salmon fishing permits. The reported personal use harvest was 215 chinook, 905 summer chum, 356 fall chum, and 198 coho salmon in 1996.

COMMERCIAL SEASON SUMMARY, 1997

Preliminary estimates of commercial sales totaled 300,116 salmon and 87,686 pounds of unprocessed salmon roe (Table 3) for the Alaskan portion of the Yukon River drainage (Figure 1) in 1997. Note that the 1997 Alaskan commercial harvest is expressed as the number of salmon sold in the round, pounds of salmon roe sold, and estimated harvest which includes the estimated number of salmon harvested to produce roe sold. Total sales of salmon in the round were composed of 112,841 chinook, 95,242 summer chum, 56,713 fall chum, and 35,320 coho salmon (Table 3). Roe sales by species totaled 3,225 pounds for chinook, 83,267 pounds for summer chum, and 1,194 pounds for fall chum salmon. The total estimated commercial harvest including the estimated harvest to produce roe sold was 435,369 salmon; 113,610 chinook, 228,252 summer chum, 58,187 fall chum, and 35,320 coho salmon. The 1997 estimated salmon harvests compared to the 1992 through 1996 five-year averages were as follows: chinook, 4% above (Table 4), summer chum, 53% below (Table 5), fall chum, 30% below (Table 6), and coho, 53% above (Table 7).

Both summer and fall chum salmon abundance was below average in 1997. Declining salmon markets for chum salmon flesh and roe also had a major impact on the summer chum salmon

commercial fishery. This resulted in a reduction in fishing and buying effort, which limited summer chum harvests in most districts and lowered exvessel value.

The 1997 Yukon Area salmon fishery was valued at $5.9 million to fishers and was approximately 12% below the 1992-1996 average of $6.7 million (Table 8). Five buyer-processors operated in the Lower Yukon Area, and six buyer-processors and ten catcher-sellers operated in the Upper Yukon Area. The number of buyers participating in the 1997 Subdistrict 4-A summer chum salmon roe fishery was only half the number that operated in 1996. A total of 725 permit holders participated in the fishery during 1997 (Table 3), which was 8% below the recent five-year-average and the lowest on record since 1972. A total of 640 permit holders fished in the Lower Yukon Area in 1997 which was 3% below the recent five-year-average. A total of 85 permit holders fished in the Upper Yukon Area, which was 34% below the recent five-year-average of 129 permits and the lowest on record since 1973.

Lower Yukon fishers received an estimated average price per pound of $2.46 for chinook, $0.10 for summer chum, $0.22 for fall chum, and $0.32 for coho salmon (Table 8). The average price paid for chinook salmon in the Lower Yukon Area was the highest since 1993. Prices paid for summer chum salmon in the round continued to be low as observed in 1996. Exvessel value of the Lower Yukon Area fishery was $5.7 million. The average income for Lower Yukon Area fishers that participated in the 1997 fishery was $8,870.

Upper Yukon commercial fishers received an estimated average price per pound of $0.97 for chinook salmon, $1.62 for chinook salmon roe, $0.07 for summer chum salmon, $1.08 for summer chum salmon roe, $0.17 for fall chum salmon, $1.75 for fall chum salmon roe, and $0.20 for coho salmon (Table 8). The average price paid for summer chum salmon roe of $1.08 per pound in 1997 was the lowest on record, and approximately 35% of the average price of $3.05 per pound in 1996. Because of the effects of lower salmon harvests across the state in 1997, prices for fall chum and coho salmon showed an increase over recent years. The exvessel value of the Upper Yukon Area fishery was $0.2 million. Permit holders who participated in the 1997 fishery earned an average of $2,540 in the Upper Yukon Area.

Department test fishing projects sold a total of 2,791 chinook, 2,557 summer chum, 867 fall chum and 498 coho salmon in District 1 and 20 chinook and 33 summer chum salmon in District 2 in 1997. These fish are not included in commercial sales.

A regulation adopted by the Board of Fisheries in February 1992, requires fishers to report the number of salmon caught but not sold during commercial fishing periods on fish tickets. Compliance with this regulation is poor. Fishers reported only 61 summer chum salmon as caught but not sold during commercial fishing periods in the Lower Yukon Area in 1997. A total of 411 chinook, 540 summer chum, 6 fall chum salmon were reported caught but not sold the Upper Yukon Area. **Proposal 186** would remove all Yukon Area districts and subdistricts, except Subdistrict 6-C from this reporting requirement. Generally, this harvest information is collected during postseason subsistence surveys and on subsistence permits. However, because Subdistrict 6-

C is located within a nonsubsistence area, this requirement is still useful for collecting harvest information.

Chinook and Summer Chum Salmon Season

The 1997 preseason outlook was for a near average chinook salmon run and a below average to average summer chum salmon run. The commercial harvest in the Alaskan portion of the drainage was anticipated to be between 88,000 and 108,000 chinook and 200,000 to 600,000 summer chum salmon.

The Lower Yukon Area was generally free of ice by May 15. The first chinook salmon catches were reported on May 22 near Sheldon Point by a subsistence fisher. The department's test fishing projects recorded the first chinook and chum salmon catches on May 29.

Based on the lower river test fishery, chinook salmon migratory timing was average. Approximately 50% of the chinook salmon run had entered the lower river by June 19. A record test fishing cumulative catch per unit effort (CPUE) of 35.6 for chinook salmon from Big Eddy and Middle Mouth 8.5 inch mesh size set gillnet sites indicated above average abundance in 1997 and similar to the large runs in 1994 and 1995. Initially, the indication of a strong run was viewed cautiously, as water levels were well below normal through June 20, which may have resulted in increased efficiency of the test fishery. In addition, one 8.5 inch mesh size gillnet site near Emmonak appeared to be catching chinook salmon with disproportionately high efficiency than actual abundance. For example, this site had a high chinook catch on June 17, but the numbers of fish caught during the commercial opening that day upstream of the test fishery were very low. Therefore, it was difficult to determine inseason how well the test fishery was performing as an indicator of abundance.

The test net cumulative CPUE of 81.6 for summer chum salmon indicated the 1997 run was near average in abundance. Again, this indication of abundance was viewed cautiously, as water levels were below normal through June 20, and then water levels were much higher than normal with a lot of debris from June 28 until July 5. Summer chum salmon migratory timing appeared to be average with approximately 50% of the run entering the lower river by June 19 according to test fishing CPUE data. However, the run was more spread out in duration than typical.

The Pilot Station sonar project estimated a passage of 132,000 large chinook and 90,000 small chinook (jacks) for a total of 222,000 chinook, and 1,402,000 summer chum salmon (Table 12). Because of operational changes, Pilot Station sonar data in 1997 could only be compared directly with data collected in 1995. Operational changes included changes to aiming criteria in 1995 to maximize the ability to detect passing fish, so all detected fish are classified as upstream oriented. Although the total passage estimates for chinook salmon were fairly similar for 1995 and 1997, the passage estimate in 1997 had a much higher proportion of small chinook salmon than the passage estimate of 37,000 small chinook in 1995. This higher proportion of small chinook salmon in the 1997 run was a factor in determining the allowable level of harvest in unrestricted mesh openings

because of escapement quality considerations. The 1997 summer chum salmon passage estimate was substantially less than the 1995 estimate of 3,638,000 fish. It will take several more seasons to evaluate the results of the project to determine how sonar passage estimates relate to subsequent harvests and escapements on the spawning grounds.

The 1997 sonar project was adversely impacted by high water and debris during late June. Signal loss was compensated for except for portions of the left bank sonar range on the following dates: June 22, 24-25, 27, and 28, and July 4-5; and all of the left bank sonar range on 26 June and 1-3 July. In addition, a heavy debris load during the end of June forced removal of all sonar equipment from the water for 2 ½ days from 28 June to 1 July. No attempts were made to estimate the missing data during these blocks of time.

The commercial harvest of chinook salmon was above the midpoint of the guideline harvest range for Districts 1 and 2 and slightly above the upper end of the guideline harvest ranges in Districts 5 and 6. However, declining salmon market conditions resulted in no commercial openings in District 3, and a limited chinook salmon harvest in District 4. Because of a below average summer chum run and weak chum salmon flesh and roe markets, commercial harvests in all districts were below the lower end of the guideline harvest ranges except for District 6 where the harvest was at the midpoint. Chum salmon roe markets which had remained relatively stable through 1996 were very disappointing in 1997.

Districts 1, 2 and 3

The anticipated Lower Yukon Area commercial harvest was 82,000 to 100,000 chinook salmon. However, the harvest from fishing periods targeting chinook salmon with unrestricted mesh size gillnets was not expected to exceed 85,000 fish. The management concern is for the quality of escapements, that is, not only escapement abundance but the proportion of female salmon in the escapements. Large mesh size gillnets utilized during unrestricted mesh size openings target older, larger chinook salmon, which includes a much larger proportion of females than small mesh size periods. Fishing periods restricted to six inch or smaller mesh size gillnets result in much higher catches of smaller predominantly male chinook salmon. Therefore, the amount of harvest taken with the larger mesh chinook salmon gear and smaller mesh gear must be carefully considered.

The normal management strategy is to open the chinook salmon directed commercial fishery in the Lower Yukon Area when increasing subsistence and/or test net catches of chinook salmon have occurred over a seven- to ten-day period. There were discussions preseason among the department, Lower Yukon Fish and Game Advisory Committee, and fishers regarding the possibility of an earlier, short commercial fishing period being established as early as June 5 in either District 1 or 2, in an effort to spread out the chinook harvest and to target male chinook salmon early in the run. Since chinook salmon migratory timing was not as early as in 1996, the 1997 commercial fishing season opened on June 11 in District 1 after approximately seven days of increasing subsistence and test fishery catches.

Through June 22, a series of three 12-hour commercial fishing periods allowing the use of unrestricted mesh size gillnets were established in Districts 1 and 2. After the combined District 1 and 2 harvest reached approximately 70,000 chinook salmon on June 23, fishing time for the fourth period in each district was reduced to 6 hours in duration. The last period with unrestricted mesh size gillnets was nine hours in duration in District 1 on June 26-27. On July 1-2, the department was willing to allow an additional unrestricted mesh size opening. However, all of the buyers were closing up because of quality concerns for late run chinook and cost savings measures. Based on test fishing CPUE data and Pilot Station sonar passage estimates, the run was assessed inseason to be above average but lower in magnitude than in 1995, and the harvest of chinook salmon with unrestricted mesh size gillnets was allowed to exceed 100,000 fish.

Six inch maximum mesh size fishing periods are utilized to target summer chum salmon in the Lower Yukon Area. Several buyers were interested in purchasing summer chums during the middle to late-June time period. There were four short chum salmon directed periods in 1997 between June 22 and June 30. Because of the low prices paid for summer chum salmon, lack of buyers in early July and below average return, the Lower Yukon Area summer chum harvest was below the lower end of the guideline harvest range. The much higher value of chinook salmon has resulted in a lot less interest in summer chum salmon by lower Yukon River fishers. For example, in District 1 an average of 427 commercial fishers participated in unrestricted mesh size openings, while an average of 141 fishers participated in restricted mesh size periods.

The combined total harvest of 105,747 chinook salmon for Districts 1 and 2 (Table 3) was 17% above the midpoint of the guideline harvest range of 90,000 fish and 4% above the 1992-1996 average harvest of 101,455 fish. A total of 102,114 chinook were harvested during unrestricted mesh size fishing periods and 3,611 chinook were harvested during fishing periods restricted to six inch maximum mesh size gillnets. A total of 22 chinook salmon were taken during the fall season. The average weight of chinook salmon was 21.2 pounds for the unrestricted mesh size harvest and 14.2 pounds for the six inch maximum mesh size harvest.

The combined commercial summer chum salmon harvest in District 1 and 2 of 78,157 fish (Table 3) was 52% below the recent 5-year-average harvest of 164,393 fish. A total of 49,953 summer chum salmon were caught during the unrestricted mesh size periods and 28,204 summer chum salmon were harvested during restricted mesh size fishing periods. The average weight of summer chum salmon was 7.2 pounds.

Preliminary age composition data from the Lower Yukon Area indicated 6-year-old fish accounted for approximately 82% of the chinook salmon samples from the commercial harvest. This was consistent with the above average return of 5-year-old fish in 1996, but inconsistent with the below average to average escapements documented in the 1991 parent year. Approximately 50% of the chinook salmon commercial harvest in District 1 and 2 was females. A total of nine fin-clipped chinook salmon from the Whitehorse hatchery were recovered during commercial catch sampling in Districts 1 and 2. Five-year-old summer chum salmon comprised approximately 75% of the samples taken from the lower river commercial harvest.

Although one fisher and buyer expressed interest in taking summer chum salmon for the sale of roe in District 3, poor market conditions precluded commercial fishing in that district in 1997.

This was the second year that a regulation which reduced the maximum depth of commercial gillnets in the Lower Yukon Area was in effect. Beginning in 1996, the depth of gillnets was decreased from 70 meshes to 50 meshes for gillnets with six inch or less mesh size and from 60 meshes to 45 meshes for gillnets greater than six inch mesh size. There has been a mixed response from fishers regarding the affect of this regulation change ranging from a minimal impact to a large impact on harvests. **Proposals #179 - #180 - Gillnet Specifications and Operations**, request the return to the pre-1996 depth of commercial gillnet specifications in Districts 1-3.

District 4 and Anvik River Management Area

Limited salmon roe markets and lower prices resulted in lower effort and subsequently lower harvest rates in District 4. Because of low harvests, more fishing periods were allowed in District 4 fisheries than in recent years. The Anvik River Management Area had 11 fishing periods, the most since its inception in 1994. Subdistrict 4-A had 10 fishing periods and Subdistricts 4-B and 4-C had 8 fishing periods, the most for each subdistrict since 1989.

Subdistrict 4-A was opened to commercial fishing on July 1. Three 12-hour fishing periods were scheduled for the first week in Subdistrict 4-A. Because subsistence fishermen requested more fishing time for set gillnets and fish wheels, and to provide for additional escapement, two 12-hour commercial fishing periods were scheduled for the second week. Thereafter, the commercial fishing schedule was adjusted weekly in an attempt to assist buyers with market, shipping and processing concerns. In 1997, 24 permit holders participated in the Subdistrict 4-A fishery as compared to 62 in 1996. Based on the below average summer chum salmon run, the lower end of the guideline harvest range of 61,000 pounds of roe for Subdistrict 4-A was targeted inseason. A total of 56,301 pounds of summer chum salmon roe were sold in Subdistrict 4-A (Table 3).

This was the fourth consecutive year that commercial fishing was allowed within the Anvik River Management Area. A three 12-hour period per week fishing schedule was maintained throughout the entire season. Generally, fishing periods were scheduled concurrently with Subdistrict 4-A openings; two fishing periods were not concurrent. A total of 13,067 pounds of summer chum salmon roe were sold in the Anvik River Management Area (Table 3). The number of permit holders that fished in the Anvik River during concurrent periods with Subdistrict 4-A ranged from 1 to 9 and averaged 4. In 1997, 9 permit holders participated in the Anvik River fishery compared to 24 in 1996. The Anvik River Chum Salmon Fishery Management Plan was last modified by the Board of Fisheries in March 1996 and a sunset clause was also adopted. **Proposal 167** would re-authorize this management plan.

Subdistricts 4-B and 4-C had uninterrupted subsistence fishing allowed by emergency order until 24 hours before the commercial fishing season opened. Subdistricts 4-B and 4-C were opened to commercial fishing beginning on June 29. The sale of 4,863 pounds of summer chum salmon roe (Table 3) in Subdistricts 4-B and 4-C was the second lowest on record since 1980. The chinoo'

salmon harvest was 1,457 which was below the lower end of the guideline harvest range. Only 12 permit holders participated in the Subdistricts 4-B and 4-C fishery as compared to 22 in 1996.

District 5

The commercial fishing season was opened in Subdistricts 5-A, 5-B, and 5-C on July 4, after the chinook salmon run was believed to be well distributed throughout these subdistricts. The harvest of 3,071 chinook salmon (Table 3) was slightly above the upper end of the guideline harvest range of 2,800 fish for Subdistricts 5-A, 5-B, and 5-C. A total of 125 summer chum were sold. Commercial fishing in Subdistrict 5-D commenced on July 12. The Subdistrict 5-D harvest of 607 chinook salmon was above the guideline harvest range of 300 to 500 chinook salmon.

District 6

The commercial fishing season opened July 11 in District 6. The total estimated commercial harvest in 1997 was 2,728 chinook and 25,287 summer chum salmon in District 6 (Table 3). The chinook salmon harvest exceeded the upper end of the guideline harvest range of 800 fish. The summer chum salmon harvest reached the mid-point of the guideline harvest range of 13,000-38,000 fish. Management of the fishery was primarily based on Chena and Salcha River tower counts and aerial survey results. The first two fishing periods were directed at the harvest of chinook salmon and the five following periods were directed at summer chum salmon. Based on commercial harvest and escapement data, the chinook salmon run to the Tanana River drainage was above average, while the summer chum salmon run appeared to be average and stronger than expected based on the 1993 parent year escapements.

Fall Chum and Coho Salmon Season

Yukon River drainage fall chum salmon return primarily as age-4 or age-5 fish. However, age-3 and age-6 fish also contribute to the run. A Ricker spawner-recruit model was used to project the returns of fall chum salmon from the 1991 to 1994 parent-years that contributed to the 1997 run. This process resulted in a 1997 preseason projection of 750,100 fall chum salmon.

The preseason projection suggested that the major contributor to the 1997 fall chum salmon run would be age-4 fish returning from the 1993 brood year. In 1993, the Yukon River drainage experienced the lowest fall chum salmon run on record, and no commercial fishing was permitted during the fall season in the Alaskan portion of the drainage in that year. Additionally, severe restrictions, which included closures, were imposed on the recreational, personal use, and subsistence fisheries. Despite these efforts, the 1993 fall chum salmon escapements throughout most of the Yukon River drainage were poor. However, in 1993 the most favorable escapements observed, when compared to respective escapement goals, were within the Tanana River drainage. When compared to its historical contribution, it was anticipated that the fall chum salmon return to the Tanana River drainage would be a strong component of the 1997 return.

The preseason projection also suggested that one of the weaker components of the 1997 fall chum salmon run would be from the Canadian mainstem stocks. Management strategies to increase the number of fall chum salmon delivered to the border included a lower, overall commercial-exploitation rate on the entire fall chum salmon run. Additionally, attempts were made to allow the early portion of the fall chum salmon run to pass through the lower Yukon River prior to commercial fishing activities. It is believed that Canadian bound salmon represent a higher proportion of the fish during the early portion of the run.

The Alaska Board of Fisheries adopted the Yukon River fall chum salmon management plan that was in effect during the 1997 season. **Proposal #172, Yukon River Drainage Fall Chum Salmon Management Plan,** provides the opportunity to review this plan. The Board of Fisheries adopted the current Yukon River Drainage Fall Chum Salmon Management Plan in March of 1996 with a sunset clause. This plan identifies the need for spawning escapement and subsistence needs for the Alaskan portion of the drainage, and the commitments for Canadian harvests. The plan is dependent on the departments ability to accurately assess the run size entering the river and taking appropriate management actions.

The 1997 management plan directed that Alaskan fall chum salmon commercial fisheries may only be allowed at run size projections greater than 600,000 fall chum salmon. The 1997 preseason projection of approximately 750,100 fall chum salmon suggested that an Alaskan fall chum salmon commercial harvest of up to 150,000 fall chum salmon could occur given healthy stocks and normal distribution. However, rebuilding efforts for Canadian and Toklat River drainage fall chum salmon stocks would reduce the allowable Alaskan commercial harvest. **Proposal # 171, The Toklat River Fall Chum Salmon Rebuilding Management Plan,** will be reviewed by the board. This plan was originally adopted in 1993 and was most recently modified in March 1996 and also contains a sunset clause.

As the 1997 run materialized inseason, the department used inseason management tools to adjust the run size projection and the corresponding, allowable Alaskan commercial harvest upward or downward. Lower Yukon River monitoring tools available to the department in 1997 included the lower Yukon River set gillnet test fishery, the Mountain Village drift gillnet test fishery, Pilot Station sonar passage estimates, and subsistence catch reports. This information, in combination with the preseason projection, was the basis for the initial management decisions in the lower Yukon River commercial fisheries.

By early August, it was estimated that the 1997 fall chum salmon return would be large enough to support commercial fishing activities. The first commercial fishing period in 1997 directed toward fall chum salmon occurred in District 1 on August 6. As the run progressed in time and migrated upriver, additional commercial fishing opportunities occurred throughout most of the Yukon River (Districts 1, 2, 4, and 5). Due to the lack of a buyer, no commercial fishing activities occurred during the fall season in District 3. Based primarily on Pilot Station sonar passage estimates (approximately 622,000 fall chum salmon as of August 31, the last day of operation) the 1997 Yukon River fall chum salmon return was estimated inseason to be approximately 675,000 fish through the end of August. This level of return, when compared

the management plan, could provide for a limited Alaskan commercial harvest at below the low end of each district(s) or subdistrict(s) guideline harvest range. The combined total of the low end of all Yukon Area guideline harvest ranges is 72,750 fall chum salmon.

A total of 56,713 fall chum salmon in the round and 1,194 pounds of fall chum salmon roe were sold in 1997 for an estimated harvest of approximately 58,187 fall chum salmon (Table 3). The 1997 estimated harvest was approximately 70% of the recent (1992 to 1996) five-year-average (approximately 83,000 fall chum salmon). All district(s) or subdistrict(s) harvests were between 49% and 86% of the low end of their respective guideline harvest range, except for District 6. As the fall chum salmon run progressed upriver, additional escapement and monitoring information became available. In 1997, inseason run strength indicators suggested that the Tanana River component of the fall chum salmon return was weaker than anticipated. Based upon inseason indicators, no fall season commercial fishing was allowed in District 6 in 1997.

Yukon River coho salmon have a slightly later but overlapping run timing with that of fall chum salmon. Comprehensive escapement information on coho salmon within the Yukon River drainage is limited. Yukon River coho salmon return as primarily age-4 fish. Results from limited escapement surveys conducted in 1993, assuming average survival, suggested that no better than an average abundance of coho salmon would return to the Yukon River drainage in 1997.

No commercial guideline harvest ranges have been established for Yukon River coho salmon. However, **proposal 173 - Coho Salmon Management Plan**, submitted by the Yukon River Drainage Fisheries Association requests the development of a Yukon River coho salmon management plan. The Board of Fisheries will be reviewing this proposal in December 1997. If adopted, a coho salmon management plan would allow for a directed Alaskan coho salmon commercial fishery. During the 1997 fishing season, the commercial harvest of coho salmon was a function of the timing, frequency, and duration of the periods established for the more numerous fall chum salmon. A total of 35,320 coho salmon were sold, all in the round (Table 3). The majority (approximately 98%) of the coho salmon harvest occurred in Districts 1 and 2. The 1997 Yukon Area coho salmon harvest was 53% above the recent five-year-average (1992-1996) of approximately 23,000 fish.

Canadian Fisheries, 1997

Management plans for the Canadian chinook and chum salmon fisheries on the Yukon River in 1997 were formulated to reflect the understandings reached in the interim Yukon River Salmon Agreement. Most of the commercial harvest on the mainstem Yukon River near Dawson is taken in set gillnets. However, beginning in 1991, more fish wheels have been used to harvest chum salmon. Harvests within the Canadian portion of the Porcupine River drainage is currently limited to an Aboriginal fishery.

Chinook Salmon

The preliminary commercial harvest was 5,311 chinook salmon (Table 9). The estimated Aboriginal fishery harvest was 8,942 chinook in the mainstem Yukon River area and 496 chinook in the Porcupine River drainage. An estimated 121 chinook salmon were taken in the domestic fishery on the Yukon River. Approximately 1,230 chinook were harvested by the sport fishery in the Canadian portion of the Yukon River drainage. The preliminary mainstem Yukon River border passage tagging estimate for chinook salmon was 53,400 fish, which was the second largest on record.

Fall Chum Salmon

The preliminary 1997 Canadian commercial harvest was 7,874 fall chum salmon (Table 10). This was the second lowest commercial harvest on record since 1978. The preliminary Aboriginal fishery harvest was estimated to be 1,216 fall chum for an estimated total harvest of 9,090 fall chum salmon in the mainstem Yukon River area. The preliminary border passage estimate for fall chum salmon was 94,725 fish. A preliminary estimate of 4,144 fall chum salmon were taken in the Porcupine River drainage Aboriginal fishery.

STATUS OF STOCKS AND FISHERY

Chinook Salmon

Commercial chinook salmon harvests in the Alaskan portion of the Yukon River drainage have shown a stable trend. The recent 5-year average (1992-1996) commercial harvest was 108,673 fish compared to the previous 5-year average (1987-1991) of 108,280 chinook salmon (Table 4). The recent 5-year average chinook salmon subsistence harvest in Alaska was 51,669 chinook salmon (Table 11). Total Canadian mainstem Yukon River harvests have averaged 18,940 chinook salmon annually (1992-1996) (Table 9).

Chinook salmon spawning stocks are widely distributed throughout the Yukon River drainage. Chinook salmon harvests are apportioned to region of origin using a combination of scale pattern analysis, age class composition similarity and geographic location of the harvest. Stock identification studies indicate that approximately 53% of the Alaskan chinook salmon harvest is spawned in Canada. Efforts to increase escapements to the Canadian mainstem Yukon River have resulted in a larger spawning escapement averaging 28,000 fish since 1992.

Escapement data from selected tributaries indicate that spawning escapement goals for lower river stocks (Yukon River drainage below the upper Koyukuk River) have generally been achieved, except for 1996. Escapement goals for middle river stocks (primarily Tanana River drainage) were readily achieved since 1993. It should be understood that caution must be used when comparing aerial survey results between years because of the variability inherent to this methodology.

Yukon River chinook salmon abundance in 1997 was assessed as above average based on the commercial harvest and escapement estimates from selected tributaries (Table 13). The return of six-year-old chinook salmon was even larger than expected based on the large return of five-year-olds in 1996. Production from the 1991 parent year appears to be very good given the escapements documented that year. Generally, chinook salmon escapements were very good throughout the drainage with minimum escapement goals achieved in all but one surveyed tributary. Minimum aerial survey escapement goals have been established in the East and West Fork Andreafsky, Anvik, North and South Fork Nulato, Gisasa, Chena and Salcha Rivers within the Alaska portion of the Yukon River drainage and there is a rebuilding step escapement goal of 28,000 chinook for the Canadian mainstem Yukon River.

Chinook salmon escapement to the Andreafsky River appeared to be near the escapement goal level. An aerial survey count of 1,510 chinook salmon in the West Fork Andreafsky was 8% above the minimum escapement goal of 1,400 salmon. The East Fork Andreafsky River aerial survey count of 1,140 chinook salmon was 76% of the minimum escapement goal of 1,500 salmon. The USFWS weir count of 3,186 chinook salmon for the East Fork Andreafsky River was only 55% of the 1995 weir count. Estimated age composition of the samples of chinook salmon collected at the weir site was 53% 4-year old, 16% 5-year-old, and 32% 6-year old salmon. Males were more numerous than females, accounting for 63% of the sample.

An aerial survey of the Anvik River on July 23, conducted under good conditions, resulted in a record count of 2,690 chinook salmon within the escapement index area, which exceeded the minimum goal of 500 salmon by 500%. The entire Anvik River survey including the tributaries was 3,979 chinook salmon compared to the minimum escapement goal of 1,300. Six-year-old chinook salmon dominated escapement samples, accounting for 44% of the total sample. Males were more numerous than females, accounting for 63% of the sample.

An aerial survey was not conducted on the Nulato River due to poor weather conditions. Minimum aerial escapement goals are 800 chinook salmon for the North Fork and 500 for the South Fork Nulato River. An estimate of chinook salmon escapement was provided from a salmon counting-tower project operated by the Nulato Tribal Council, Bering Sea Fishermen's Association (BSFA) and ADF&G. The tower count of 4,766 chinook salmon was the highest recorded since inception of the project in 1994.

No aerial survey was conducted on the Gisasa River, a tributary to the Koyukuk River, because of poor weather. There is a minimum aerial survey escapement goal of 600 chinook salmon for the Gisasa River. The USFWS counted 3,764 chinook salmon migrating through the Gisasa River weir, which was approximately 94% of the 1995 weir count and second highest on record since initiation of the project in 1994. Estimated age composition of the samples of chinook salmon collected at the weir site was 37% 4-year old, 27% 5-year-old, and 36% 6-year old salmon. Males were more numerous than females, accounting for 74% of the sample.

A weir was in operation on the South Fork of the Koyukuk River in 1997 from July 6 through September 19 by the USFWS. However, due to high water levels, after August 15 there were

only four days, August 24-27, when the weir was operable. A total of 1,642 chinook salmon were counted. Six-year-old chinook salmon dominated escapement samples, accounting for 76% of the total sample. Females were more numerous than males, accounting for 62% of the sample.

Since 1993, inseason assessment of chinook salmon escapement to the Tanana River drainage has been based on counts of chinook salmon passing the Chena and Salcha River tower sites operated by Sport Fish Division of ADF&G. High, turbid water hampered the operations on the Salcha River several times during the 1997 season. The preliminary tower count estimates for Chena and Salcha Rivers were 13,390 and 18,396 chinook salmon respectively. The minimum aerial survey escapement goals for the Chena River and Salcha River index areas are 1,700 and 2,500 salmon respectively. An aerial survey of the Chena River conducted on July 18 under good conditions, resulted in a count of 3,495 chinook salmon in the index area, which was double the minimum escapement goal for this index area. An areial survey of the Salcha River index area on August 1 under poor conditions resulted in a count of 3,457 chinook salmon, which was 38% above the minimum escapement goal. Age and sex composition samples were collected in 1997 from carcass surveys on both rivers. Analysis of these data are not yet complete.

Preliminary results of the Department of Fisheries and Oceans mark and recapture tagging project at the U.S./Canada border indicated a total spawning escapement for the Canadian portion of the Upper Yukon River drainage of approximately 37,796 chinook salmon (Table 14). This is 35% above the rebuilding step goal of 28,000 chinook salmon.

Summer Chum Salmon

The recent 5-year average (1992-1996) estimated commercial harvest was 488,616 summer chum salmon, which was a 50% decrease from the previous 5-year average of 973,448 salmon (Table 5). Approximately 223,287 summer chum salmon are taken annually (1992-1996 average) for subsistence use throughout the drainage (Table 11). Summer chum salmon used for subsistence includes the reported use of carcasses related to commercial roe fisheries.

Summer chum salmon primarily spawn in tributaries from the mouth of the Yukon River to the Tanana River drainage. Escapements in the Anvik River, the largest single producer of summer chum salmon, have been above the escapement goal since 1991 (Table 15). However, spawning escapements to other Yukon River tributaries, based on limited aerial survey information, appeared to have been below desired levels in 1993. In general, escapement objectives appear to have been met in the majority of the drainage from 1994 through 1996. However, severe flooding in August 1994, particularly in the Koyukuk River drainage, and the lack of snowfall during the winter of 1995-1996 may affect the production from the 1994 and 1995 parent years.

Preliminary postseason analysis of comparative commercial harvest and escapement data indicate the 1997 summer chum salmon run was below average in magnitude. Spawning escapements to selected tributaries showed variable results (Table 15). Those that met minimum

goals or were considered adequate were Anvik, Nulato, Chena and Salcha Rivers and Kaltag and Clear Creeks. The East Fork Andreafsky, Gisasa and South Fork Koyukuk Rivers had poor escapements.

Minimum aerial-survey based escapement goals for summer chum salmon have been established in the East and West Fork Andreafsky River, North Fork Nulato River, Clear and Caribou Creeks of the Hogatza-Koyukuk River drainage, and the Salcha River. Because these minimum escapement goals are based on aerial survey index counts, they do not represent the total escapement to the spawning tributary. A sonar-estimate based escapement goal for summer chum salmon has been established for the Anvik River.

The preliminary Anvik River sonar-based escapement estimate of 609,118 summer chum salmon was approximately 22% above the minimum escapement goal of 500,000. However, the run was lower than expected based upon parent year escapements of 775,626 in 1992 and 517,409 in 1993. Five-year-old salmon dominated escapement samples, accounting for 54% of the sample. Females accounted for 57% of the samples.

Weir projects were operated by USFWS on the East Fork Andreafsky, Gisasa Rivers, and the South Fork of the Koyukuk River. A total of 51,139 summer chum salmon were counted passing through the weir on the East Fork Andreafsky River. This count was 53% below the 1996 weir count and the second lowest escapement recorded from a tower, weir, or sonar project. The summer chum salmon minimum aerial survey escapement goal for the East Fork Andreafsky River is 109,000 fish. The minimum escapement goal for the West Fork Andreafsky River is 116,000 aerial survey fish. However, aerial surveys were not conducted on the Andreafsky River for summer chum salmon in 1997. The weir count indicated the minimum escapement goal for the East Fork Andreafsky River was not met. However, it should be noted that the aerial survey escapement goals for the Andreafsky River are under review at this time.

A total of 31,802 summer chum salmon were counted passing through the Gisasa River weir. A summer chum salmon escapement goal has not been established for this river. However, the 1997 weir count was 20% of the 1996 weir count and the lowest on record since its inception in 1994. Five-year-old summer chum salmon accounted for 78% of the pooled escapement samples, with 7% 4-year-old and 15% 6-year-old. Female salmon were slightly more numerous than males, accounting for 51% of the sample.

The USFWS operated a weir project on the South Fork of the Koyukuk River for the second year beginning on July 6. During the period July 6 through August 15, 11,237 chum salmon were counted. This number was 70% less than the 1996 count of 37,450. Sex ratio sampling indicated 36% were females.

Counting-tower projects were operated on Kaltag River, Nulato River, Clear Creek, and the Chena and Salcha Rivers. The Kaltag Creek tower project was operated by the City of Kaltag and funded by the Alaska Cooperative 4-H Extension Service and BSFA. USFWS and TCC operated

a counting tower on Clear Creek, a tributary of the Hogatza River within the Koyukuk River drainage.

The estimated summer chum salmon escapement into Kaltag River in 1997, 48,018 salmon, was 7% less than the 1996 estimate and 38% less than the 1995 escapement estimate. Although, no escapement goal has been established for Kaltag Creek, this escapement was considered adequate.

The estimated summer chum salmon escapement into the Nulato River (both forks combined) was 157,975 salmon. Based on this tower count, it is believed the escapement goal was met. An aerial survey of the Nulato River was not conducted due to poor weather conditions. Five-year-old salmon dominated the escapement samples, accounting for 67% of the total. Approximately 49% of the sample were females.

This was the third year the Clear Creek tower on the Hogatza River was operated. Summer chum salmon passage was estimated at 76,454 fish. Although, the estimated escapement in 1997 was 24% and 35% lower than the escapement levels in 1996 and 1995 respectively, this escapement was considered adequate. Sex ratio sampling indicated 41% were female.

The Chena River tower count was 9,439 which was 74% of the 1996 count of 12,810, but similar to the average count of 9,182 for the years 1993, 1994 and 1996. High, turbid water hampered operations on the Salcha River tower at times during the 1997 season. The Salcha River tower count of 35,741 summer chum salmon was 52% below the 1996 count of 74,827 fish, but similar to the average count of 37,718 for the period of 1993 to 1996. On August 11 a survey was flown on the Chena River under poor conditions and 594 summer chum were observed. A Salcha River survey was flown on August 1 under poor survey conditions and 3,968 summer chum were observed. The Salcha River aerial survey was 13% above the minimum escapement goal of 3,500 summer chum salmon.

Fall Chum Salmon

Commercial fall chum salmon harvests in the Alaskan portion of the Yukon River drainage have shown a decreasing trend. The recent 5-year average (1992-1996) estimated commercial harvest of 83,142 fish is a reduction of approximately 50% compared to the previous 5-year average (1987-1991) of 161,180 fall chum salmon (Table 6). The recent 5-year average fall chum salmon subsistence harvest in Alaska was 113,667 fish (Table 11). This was a major decrease from the previous 5-year average of 187,226 fish, primarily due to subsistence fishing restrictions in 1993 and 1994. Approximately 90% of the annual reported subsistence fall chum salmon harvest has occurred in the Upper Yukon Area. Total Canadian mainstem Yukon River fall chum salmon harvests have decreased by approximately 21% from an average of 32,401 fish annually (1987-1991) to an average of 25,619 fish annually (1992-1996) (Table 10).

Major fall chum salmon spawning areas are located in the Chandalar, Tanana, and Porcupine River drainages and within the Canadian portion of the Yukon River drainage. Interim, minimum

escapement goals for the Toklat, Delta, Sheenjek, and Fishing Branch Rivers are 33,000, 11,000, 64,000, and 50,000 fall chum salmon, respectively (Table 16). Unlike chinook and summer chum salmon escapement goals, fall chum salmon escapement goals are based on estimates of total spawning abundance. In addition, annual estimates of border passage and spawning escapement are available for the fall chum salmon stock in the Canadian portion of the upper mainstem Yukon River. The long term goal of rebuilding the Canadian Yukon River mainstem stock is for a minimum of 80,000 fall chum salmon spawners.

Historical tagging studies conducted near Galena and Ruby indicated that the early segment of fall chum salmon are primarily bound for the Porcupine River drainage and Canadian portion of the Yukon River drainage. The later segment of the fall chum salmon run, although likely mixed with other stocks, is believed to be destined primarily for the Tanana River drainage. Genetic stock identification using allozyme and DNA analyses may improve our understanding of fall chum salmon timing by spawning stock through the fisheries.

Fall chum salmon runs in 1992 and 1993 were poor, with spawning escapements below goals in most systems (Table 16). Fall chum abundance and subsequent escapements were much greater from 1994 through 1996, with all fall chum salmon spawning escapement goals achieved in 1994 and 1995.

The total run size of Yukon River fall chum salmon in 1997, estimated as the Pilot Station sonar passage estimate summed with the commercial and estimated subsistence harvest downstream of the sonar site, size was below the preseason projection of 750,100 fish. The estimated number of fall chum salmon passing Pilot Station was 622,066 ± 24,494 (90% C.I.) fish for the period July 19 though August 31. A preliminary commercial harvest of 44,700 fall chum salmon and an estimated subsistence harvest of approximately 9,000 fall chum salmon (the average estimated for 1991-1996), results in an estimated 53,700 fish harvested below Pilot Station. Thus, total run size in 1997 is estimated to have been approximately 650,000 to 700,000 fall chum salmon. This estimate is considered to be conservative as more fall chum salmon likely passed Pilot Station after August 31.

A review of upper river test fish data and escapement information indicates that the non-Tanana River run component, although not as strong as in 1995 and 1996, was comparatively much stronger than the Tanana River run component in 1997. Excluding the Fishing Branch River, escapements upstream of the Tanana River were assessed as good and above minimum desired levels. The preliminary fall chum salmon escapement estimate for the Chandalar River was approximately 199,874 fish and similar in magnitude to the large escapement estimates for that stream in 1995 and 1996. Assessment of escapement to the Porcupine River drainage was based upon observations made in the Sheenjek and Fishing Branch Rivers. Although sonar operations were suspended in the Sheenjek River for five to six days due to high water which prevailed in late August and early September 1997, total escapement was conservatively estimated to have exceeded 80,000 fish, thus meeting the minimum escapement goal of 64,000 fish. By comparison, the escapement goal for the Fishing Branch River was not achieved in 1997. Only

26,959 chum salmon were counted through the DFO weir from August 28 through October 15; 46% below the minimum escapement goal of 50,000 fish.

The preliminary mark and recapture abundance estimate made by USFWS for Yukon River fall chum salmon passing "Rampart Rapids" was approximately 393,000 chum salmon for the period July 21 through September 28. This preliminary estimate is approximately 40% lower than the abundance estimate made in 1996 of approximately 660,000 fish for the period August 1 through September 19. Similarly, the sum of escapements to the Chandalar, Sheenjek and Fishing Branch Rivers together with the border passage estimate in 1997 (approximately 402,000 fish) was also on the order of 40% lower than that estimated (approximately 677,000 fish) to these areas in 1996.

The 1997 preliminary DFO mark and recapture estimate of spawning escapement for Canadian mainstem Yukon River fall chum salmon was 85,635 fish. This is 56% above the 1997 targeted level of 55,000 fall chum salmon, which was the goal established by the Yukon River Panel as part of rebuilding the 1993 brood year. This was the fourth consecutive year that estimated spawning escapement was above the long-term rebuilding goal of >80,000 fall chum salmon.

Tanana River fall chum salmon escapement in 1997 was evaluated to be extremely weak and comparatively much lower than that realized to other areas of the Yukon River. The preliminary population estimate for the Toklat River, based upon expanded ground surveys of Toklat Springs, was 14,511 fall chum salmon. This estimate is more than 56% below the minimum escapement goal of 33,000 chum salmon.

For the upper Tanana River (upstream of the Kantishna River), a preliminary mark-and-recapture total abundance estimate through October 4, 1997 of approximately 41,000 fall chum salmon was made using a non-stratified estimator. However, diagnostic data analyses are still being conducted and it is anticipated that the final abundance estimate (using temporal stratification) is likely to increase by 25,000 to 30,000 chum salmon. This would still indicate that total run size in 1997 was likely on the order of approximately 50% of that estimated in 1996 (approximately 135,000) and 25% of that estimated in 1995 (approximately 268,000).

Currently, intensive ground surveys are being conducted in the Delta River. Although a final assessment of the number of fall chum salmon spawners is not yet available, it is apparent that the minimum escapement goal of 11,000 fish will not be achieved. A peak survey count of only 5,859 fall chum salmon in the Delta River was obtained on November 14, with most of the run estimated to be in the river based upon historic timing information. It is anticipated that the final estimate of total escapement will not exceed 8,000 fall chum salmon. While no escapement goals exist for other fall chum salmon spawning areas in the upper Tanana River, a total of 3,145 chum salmon were counted in Bluff Cabin Slough on October 31. This is well below the 1987-1996, ten-year average of 6,300 chum salmon.

The USFWS operated a weir in the South Fork Koyukuk River for the second consecutive year in 1997 to monitor salmon escapements. After August 15, operations were suspended due to high water conditions for nearly the remainder of the season. The weir was in operation only three and

one-half additional days in late August (24th-27th). A total of 2,685 chum and no coho salmon were passed during that period.

Coho Salmon

Commercial coho salmon harvests in the Alaskan portion of the Yukon River drainage have shown a decreasing trend. The recent 5-year average (1992-1996) commercial harvest of 23,085 fish was a decrease of approximately 64% compared to the previous 5-year average (1987-1991) of 63,742 coho salmon (Table 7). Similarly, the recent 5-year average coho salmon subsistence harvest in Alaska of 34,288 fish was a 29% decrease from the previous 5-year average of 48,259 coho salmon (Table 11). Reductions in coho salmon harvests have occurred because of generally poor fall chum salmon runs in 1992 and 1993 and subsequent restricted fishing time.

Coho salmon escapement assessment is very limited in the Yukon River drainage due to funding limitations and survey conditions generally encountered during periods of peak coho salmon spawning activity. Most of the escapement information that has been collected on coho salmon is from the Tanana River drainage (Table 17). The only escapement goal established is for the Delta Clearwater River (DCR), which has a minimum goal of 9,000 fish. This goal is based upon the number of coho salmon observed from a boat survey of the DCR index area during peak spawning activity. The 1997 DCR coho salmon escapement estimate on October 24 was 11,525 fish. Additional surveys are conducted by TCC in the Nenana River drainage with BSFA funding.

Through a cooperative agreement between the USFWS and BSFA, 1997 marked the third consecutive year that East Fork Andreafsky weir operations were extended into September to collect coho salmon escapement data. Normally, timing of the weir operation is planned to count chinook and summer chum salmon, terminating in late July or early August. A total of 9,462 coho salmon were passed through September 13, the last day of operation in 1997. This compares to 8,037 coho salmon counted past the weir through September 16 in 1996 and 10,901 through September 12 in 1995.

OUTLOOK FOR 1998

Chinook Salmon

Typically, the majority of the chinook salmon returning to the Yukon River are 6-year-old fish; however, 5- and 7-year-old fish make a significant contribution to the run. Spawning ground escapements in 1992, the brood year producing 6-year-old fish returning in 1998, were judged to be average to above average in magnitude. However, the return of this brood year as 5-year-old fish in 1997 appeared to be below average. The 7-year-old return is expected to be strong based upon the high contribution of age-6 fish in the 1997 run. The return of 5-year-old fish in 1998 is expected to be average to above average in abundance based on the spawning escapements observed in 1993.

Overall, the 1998 chinook salmon run is anticipated to be near average in strength. The commercial harvest in Alaska is expected to be 88,000 to 108,000 chinook salmon (82,000 to 100,000 fish in the Lower Yukon Area and 6,000 to 8,000 fish in the Upper Yukon Area).

Summer Chum Salmon

The return of 5-year-old fish in 1998 is expected to be below average based on spawning escapements observed in 1993 and the contribution of 4-year-old fish in the 1997 run. An above average return of 4-year-old summer chum salmon is expected. Summer chum salmon spawning escapement to the Anvik River in 1994 was 1,125,000, more than double the minimum escapement goal of 500,000 fish. Escapements to other spawning areas in 1994 appeared to be above average based upon weir counts for the East Fork Andreafsky and Gisasa Rivers and tower counts on the Nulato, Chena and Salcha Rivers and Kaltag and Clear Creeks. Overall, the 1998 outlook is for an average to above average summer chum salmon run. The commercial harvest is expected to be 500,000 to 800,000 fish given the uncertainties associated with run distribution and market conditions.

Fall Chum Salmon

Fall chum salmon return primarily as 4- or 5-year-old fish; although 3- and 6-year-old fish also contribute to the run. A Ricker spawner-recruit model was used to predict the returns of fall chum salmon from the 1992 to 1995 parent-years that will contribute to the 1998 run. This process resulted in a 1998 preseason projection of 880,300 fish with the following approximate age composition:

Age-3 fish	16,400	(1995 Brood Year)
Age-4 fish	649,400	(1994 Brood Year)
Age-5 fish	200,600	(1993 Brood Year)
Age-6 fish	13,900	(1992 Brood Year)

It is anticipated that the major contributor to the 1998 run will be the age-4 fish returning from the 1994 brood year. In that year fall chum salmon run strength was assessed inseason to be much weaker than it in fact was. Initially, this resulted in closures or restrictions to various fall season fisheries throughout the drainage on a run size much larger than originally believed. The resulting low exploitation on fall chum salmon resulted in excellent escapements throughout the drainage, with all escapement goals in 1994 being met.

Should the 1998 fall chum salmon run materialize as projected, run size would be sufficient to not only meet escapement and subsistence requirements, but also provide for commercial opportunity. A run of 880,300 fall chum salmon is some 95,000 fish greater than the average run size for the 24-year period 1974 through 1997, and more than 250,000 fish above average for even-numbered year returns.

Coho Salmon

Although comprehensive escapement information on Yukon River drainage coho salmon is lacking, it is known that coho salmon have later and overlapping run timing with fall chum salmon, and primarily return at age 4. Assuming average survival, a very strong return of coho salmon is likely to materialize in 1998. This is based upon results of the limited escapement surveys conducted in 1994, when escapements were considered average to above average in all areas examined. As an example, more than 60,000 coho salmon were counted in the DCR alone, the highest on record and well in excess of the minimum escapement goal of 9,000 to that river.

Currently, there are no Alaska Board of Fisheries established coho salmon guideline harvest ranges within the Yukon Area, and coho salmon are considered as incidental harvest during the fall season fishery directed at chum salmon. Under this regime, any commercial harvest of coho salmon in 1998 would be largely dependent upon the abundance of fall chum salmon and accompanying management strategies to harvest that species.

BOARD REGULATORY PROPOSALS, DECEMBER 1997

There are a number of regulatory proposals from the staff and some from the public that are primarily housekeeping in nature. Over the years, several changes to regulations in one section of regulations have not been changed in related regulations. In some cases there have been changes in regulations, which have resulted in other regulations requiring relatively minor modifications or becoming unnecessary. Additionally, there is a need for clarifying several regulations to assist the public in understanding regulations. Proposals the staff feel are primarily housekeeping type measures include: #157, #158, #161, #162, #164, #165, #178, #183, #187, #188 and #189.

Major Issues

There are several important regulatory proposals primarily management plans that will be addressed by the board in December 1997.

Proposal #150 - Stebbins/St. Michael Pink Salmon Fishery. This proposal would establish a new pink salmon fishery on primarily Yukon River stocks migrating through southwestern Norton Sound near Stebbins and St. Michael. Issues concern possible interception of other salmon such as Yukon River chinook, summer chum and fall chum salmon and possible allocation issues.

Proposal #169 - Tanana River Salmon Management Plan. Proposal 169 was submitted for the Board of Fisheries to review the management of Subdistrict 5-A and the Tanana River in view of the likely presence of Tanana River salmon stocks in Subdistrict 5-A.

Proposal #171 - The Toklat River Fall Chum Salmon Rebuilding Management Plan. The Toklat River Fall chum Salmon Management Plan will be reviewed by the board. This plan was originally adopted in 1992 and was most recently modified in March 1996.

Proposal #172 - Yukon River Drainage Fall Chum Salmon Management Plan. The Board of Fisheries adopted the current management plan in March 1996 with a sunset clause. This plan identifies the need for spawning escapement and subsistence needs. The plan is dependent on the department's ability to accurately assess the run size entering the river and taking appropriate management actions.

Proposals #173 - #175 - Yukon River Coho Salmon Management Plan. Presently, there is no regulatory management plan for coho salmon. No commercial guideline harvest ranges have been established for coho salmon.

FIGURE, TABLES AND APPENDICES

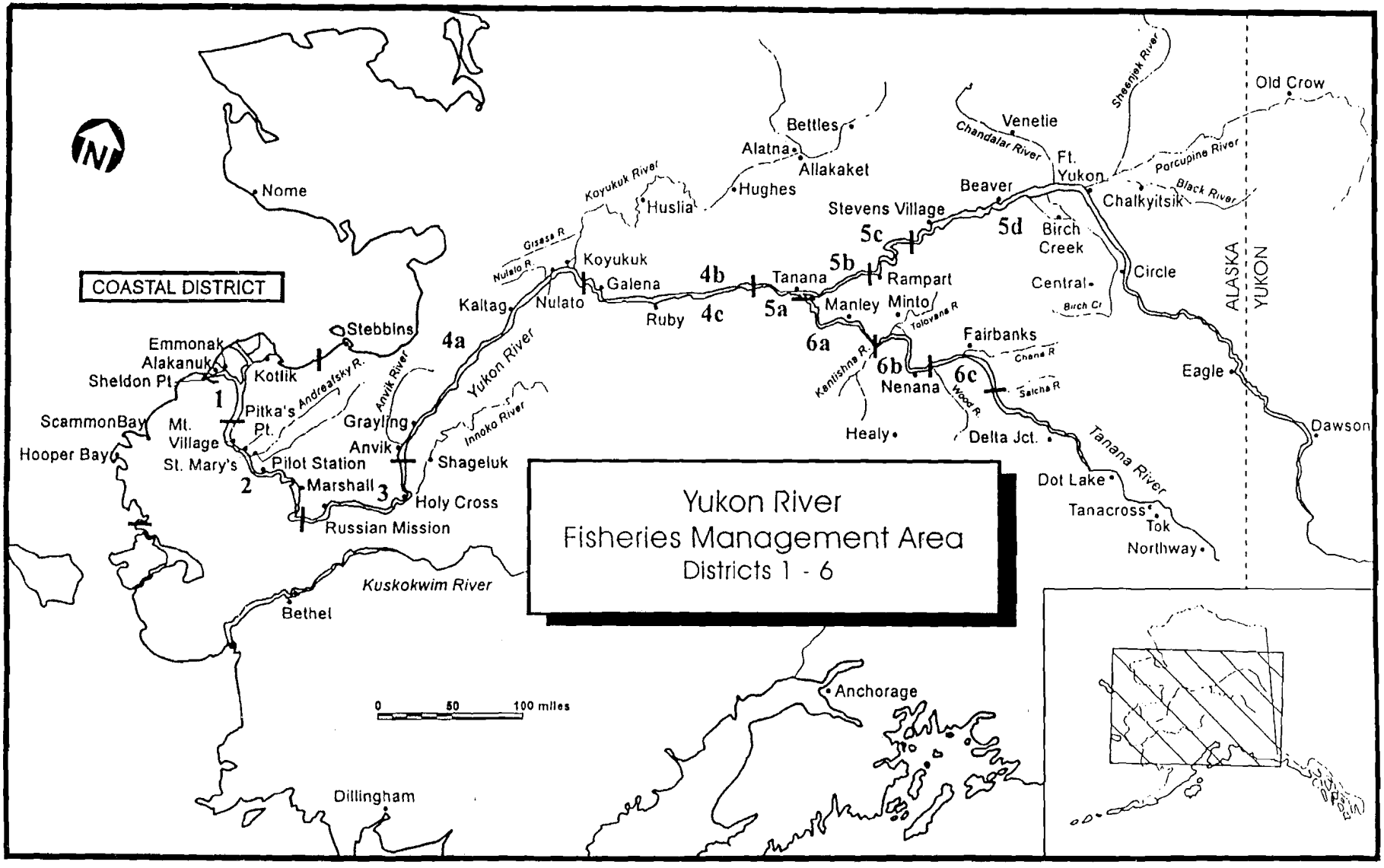
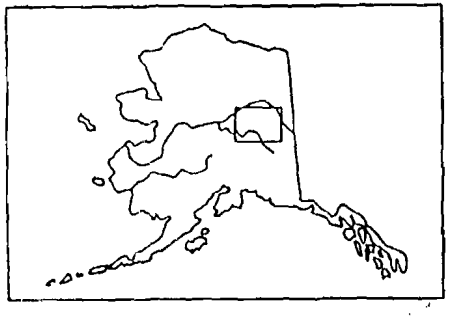


Figure 1. Map of the Alaskan portion of the Yukon River drainage showing communities and fishing districts, 1997.

5 AAC 99.015 JOINT BOARD NONSUBSISTENCE AREAS. (4) The Fairbanks Nonsubsistence Area is comprised of the following: within Unit 20(A) as defined by 5 AAC 92.450(20)(A) east of the Wood River drainage and south of the Rex Trail but including the upper Wood River drainage south of its confluence with Chicken Creek, within Unit 20(B) as defined by 5 AAC 92.450(20)(B) the North Star Borough and that portion of the Washington Creek drainage east of the Elliot Highway, within Unit 20(D) as defined by 5 AAC 92.450(20)(D) west of the Tanana River between its confluence's with the Johnson and Delta Rivers, west of the west bank of the Johnson River, and north and west of the Volkmar drainage, including the Goodpaster River drainage, and within Unit 25(C) as defined by 5 AAC 92.450(25)(C) the Preacher and Beaver Creek drainages.



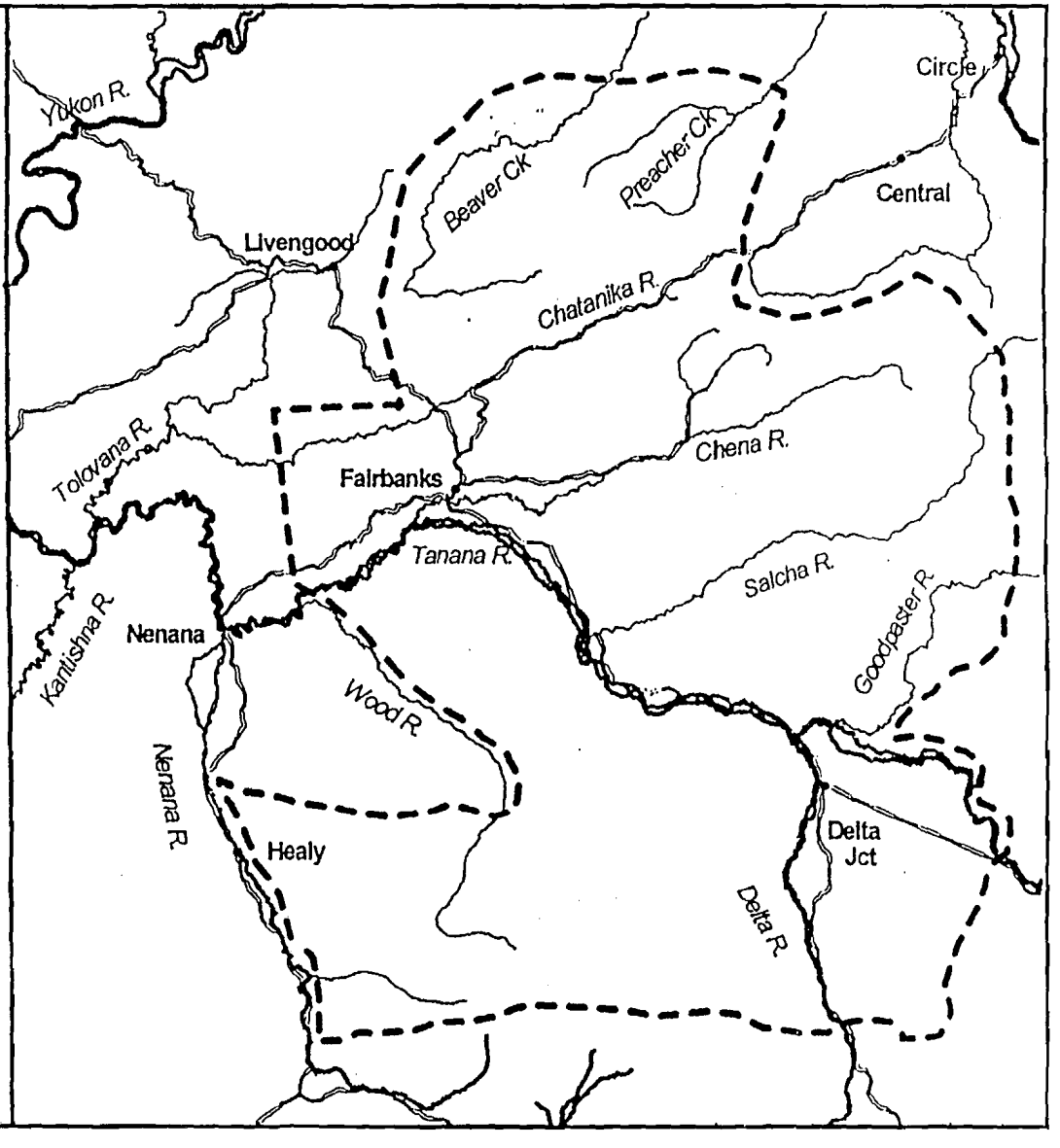


Figure 2. The Fairbanks Nonsubsistence Area.

Table 1. Guideline harvest ranges and mid-points for commercial harvest of Yukon River chinook, summer chum and fall chum salmon in Alaska, 1997.

Chinook Salmon

District or Subdistrict	Guideline Harvest Range [a]					
	Lower		Mid-Point		Upper	
	Numbers	Percent	Numbers	Percent	Numbers	Percent
1 and 2	60,000	89.1	90,000	91.6	120,000	92.9
3	1,800	2.7	2,000	2.0	2,200	1.7
4	2,250	3.3	2,550	2.6	2,850	2.2
5A, B, C	2,400	3.6	2,600	2.6	2,800	2.2
5D	300	0.4	400	0.4	500	0.4
6	600	0.9	700	0.7	800	0.6
Total	67,350	100.0	98,250	100.0	129,150	100.0

Summer Chum Salmon

District or Subdistrict	Guideline Harvest Range [b]					
	Lower		Mid-Point		Upper	
	Numbers	Percent	Numbers	Percent	Numbers	Percent
1 and 2	251,000	62.8	503,000	62.9	755,000	62.9
3	6,000	1.5	12,500	1.6	19,000	1.6
4A [c]	113,000	28.3	225,500	28.2	338,000	28.2
4B, C	16,000	4.0	31,500	3.9	47,000	3.9
5	1,000	0.3	2,000	0.3	3,000	0.3
6	13,000	3.3	25,500	3.2	38,000	3.2
Total	400,000	100.0	800,000	100.0	1,200,000	100.0

Anvik River Management Area Roe cap of 100,000 pounds [d]

Fall Chum Salmon

District or Subdistrict	Guideline Harvest Range [e]					
	Lower		Mid-Point		Upper	
	Numbers	Percent	Numbers	Percent	Numbers	Percent
1, 2, and 3	60,000	82.5	140,000	71.2	220,000	68.6
4B, C	5,000	6.9	22,500	11.4	40,000	12.5
5A, B, C	4,000	5.5	20,000	10.2	36,000	11.2
5D	1,000	1.4	2,500	1.3	4,000	1.2
6	2,750	3.8	11,625	5.9	20,500	6.4
Total	72,750	100.0	196,625	100.0	320,500	100.0

[a] The chinook salmon guideline harvest ranges have been in effect since 1981.

[b] Summer chum salmon guideline harvest ranges were established in February 1990 based on the average harvest shares from 1975-1989.

[c] Or the equivalent roe poundage of 61,000 to 183,000 pounds or some combination of fish and pounds of roe.

[d] The current Anvik River Management Area roe cap was established in March 1996.

[e] The current fall chum salmon guideline harvest ranges were established in 1990.

Table 2. Combined subsistence and personal use salmon harvest estimates, test fish harvests given away for subsistence use, and related information, Yukon River, 1996. a

Village	Survey Date or Permit Village		Fishing Households b	Dogs	Estimated Harvest				Primary Gear Used		
					Chinook	Summer Chum	Fall Chum	Coho	Set Nets	Drift Nets	Fish Wheels
Hooper Bay	9/13, 9/27	c	109	219	1,127	15,870	392	92	105	0	0
Scammon Bay	9/14		55	187	1,238	6,365	0	0	55	0	0
Coastal District Total			164	406	2,365	22,235	392	92	160	0	0
Sheldon Pt.	9/9		24	85	450	2,634	21	138	21	3	0
Alakanuk	9/6-9/7, 9/29		52	187	662	6,171	100	103	35	17	0
Emmonak	9/5-9/8	d	62	178	702	6,097	1,501	594	16	46	0
Kotlik	9/10	e	50	232	1,832	12,387	2,525	1,610	24	24	0
District 1 Subtotal			188	682	3,646	27,289	4,147	2,445	96	90	0
Mt. Village	9/18, 9/20	f	74	260	1,315	9,285	1,366	276	5	69	0
Pitkas Pt.	9/19		22	77	762	1,619	603	691	2	19	0
St. Marys	9/16-9/18, 9/20		63	171	1,766	6,736	658	292	6	52	0
Pilot Station	9/24-9/25	g	52	117	1,811	6,355	448	1,258	21	31	0
Marshall	9/23		46	419	2,126	4,431	2,212	958	14	32	0
District 2 Subtotal			257	1,044	7,780	28,426	5,287	3,475	48	203	0
Russian Mission	9/21		40	201	2,709	3,554	587	255	20	20	0
Holy Cross	9/21		39	99	3,953	1,700	1,814	0	23	16	0
Shageluk	9/24		16	213	121	6,114	305	189	16	0	0
District 3 Subtotal			95	513	6,783	11,368	2,706	444	59	36	0
Lower Yukon River Drainage Total			540	2,239	18,209	67,083	12,140	6,364	203	329	0
Anvik	9/24-9/25		20	78	768	185	457	44	9	4	5
Grayling	9/26		35	148	1,036	587	1,759	236	22	7	2
Kaltag	10/10		40	102	994	31	1,049	298	6	14	20
Nulato	10/8-10/9		51	305	1,461	1,003	2,299	149	12	19	17
Koyukuk	10/8		10	117	402	41	2,458	476	4	4	2
Galena	10/7, 10/11		71	312	2,770	3,902	6,620	780	38	5	27
Ruby	10/14		8	96	557	2,016	561	376	7	0	1
District 4 Yukon R. Subtotal			235	1,158	7,988	7,765	15,203	2,359	98	53	74
Huslia	10/9		10	193	67	2,372	298	18	10	0	0
Hughes	10/10		5	70	54	1,411	274	51	5	0	0
Allakaket	10/21		18	113	82	4,668	961	39	16	0	0
Alatna	10/21		2	11	2	209	0	0	2	0	0
Bettles	10/22		2	62	0	0	50	0	2	0	0
Koyukuk R. Subtotal			37	449	205	8,660	1,583	108	35	0	0
District 4 Subtotal			272	1,607	8,193	16,425	16,786	2,467	133	53	74
Tanana	10/15-10/16		55	472	2,741	5,190	21,420	6,110	21	0	34
Rampart	10/22		13	46	1,751	1,188	896	5	10	0	3
Fairbanks NSB	permits	h	30	191	1,166	2,958	2,727	42	25	0	5
Stevens Village	10/16, permits	j	7	67	681	530	991	2	7	0	0
Birch Creek	10/23		1	13	0	0	0	0	0	0	0
Beaver	10/16		13	47	886	572	9	7	12	0	0
Ft. Yukon	10/30-11/01	k	69	422	4,957	26	8,144	157	37	0	32
Circle	permits	m	8	65	1,781	271	5,308	0	4	0	4
Central	permits	n	5	14	131	53	132	0	5	0	0
Eagle	permits	o	32	214	1,092	105	14,916	1	25	0	7
Other	permits	p	5	22	377	616	505	0	3	0	1
District 5 Yukon R. Subtotal			238	1,573	15,563	11,509	55,048	6,324	149	0	86

-Continued-

Table 2. (page 2 of 2)

Village	Survey Date or Permit Village		Fishing Households b	Dogs	Estimated Harvest Chinook	Summer Chum	Fall Chum	Coho	Primary Gear Used Set Nets	Drift Nets	Fish Wheels
Venetie	10/21-10/22		6	155	134	0	7,195	264	6	0	0
Chalkyitsik	10/29-10/30		4	67	30	0	1,230	0	3	0	1
Chandalar/Black Rivers Subtotal			10	222	164	0	8,425	264	9	0	1
District 5 Subtotal			248	1,795	15,727	11,509	63,473	6,588	158	0	87
Manley	permits	q	16	425	134	1,219	10,662	2,462	10	0	6
Minto	permits	r	33	316	523	1,421	4,381	1,223	23	0	9
Nenana	permits	s	32	481	423	4,411	14,210	7,883	17	0	15
Healy	permits	t	4	96	0	33	1,384	1,011	4	0	0
Fairbanks NSB	permits	u	94	226	312	1,295	6,084	2,509	79	0	4
Delta Junction	permits	v	5	3	0	2	91	3	5	0	0
Other	permits	w	13	147	0	10	11	0	13	0	0
District 6 Tanana R. Subtotal			197	1,694	1,392	8,391	36,823	15,091	151	0	34
Upper Yukon River Drainage Total			717	5,096	25,312	36,325	117,082	24,146	442	53	195
Alaska, Yukon River Drainage Total			1,257	7,335	43,521	103,408	129,222	30,510	645	382	195
Survey Village Subtotals			1,144	5,541	38,592	105,921	66,232	14,460	592	382	144
Permit Area Subtotals			277	2,200	5,939	12,394	60,411	15,134	213	0	51
Test Fish Subtotals		x			1,355	7,328	2,971	1,008			
Alaska, Yukon Area Total (including coastal communities)			1,421	7,741	45,886	125,643	129,614	30,602	805	382	195

a Data collected by Alaska Department of Fish and Game, (ADF&G) Commercial Fisheries Management and Development Division. Survey data is expanded for number of fishing households, number of dogs, and harvest. Permit data is unexpanded, the number of dogs is based on information obtained from permits issued, while the number of fishing households and their harvest is based on returned permits. Gear data represents the primary gear types used by fishing households.

b Estimated number of households that fished in surveyed communities or number of permit households who reported fishing in permit required areas.

c A 1986 Hooper Bay salmon tagging study conducted by the Bering Sea Fishermen's Association (BSFA) suggested that harvests in the Nuok Spit area of Hooper Bay intercepted Yukon River and Norton Sound chum salmon stocks.

d Includes 329 chinook, 879 summer chum, 693 fall chum, and 326 coho salmon from ADF&G test fish catches.

e Includes 1,026 chinook, 6,173 summer chum, 728 fall chum, and 429 coho salmon from ADF&G test fish catches.

f Includes 319 fall chum and 228 coho salmon from BSFA test fish catches.

g Includes 276 summer chum, 150 fall chum, and 25 coho salmon from ADF&G test fish catches.

h Fairbanks North Star Borough households that obtained a permit to fish in a Yukon River permit required area. Of the 46 permits issued, 43 returned their permits, and 30 indicated that they fished.

j Permit harvest information from Stevens Village residents was used to compliment the information obtained by the survey.

k Includes 1,081 fall chum salmon from Council of Athabaskan Tribal Governments (CATG) test fish catches.

m Of the 11 permits issued in Circle, 11 returned their permits and 8 indicated that they fished.

n Of the 7 permits issued in Central, 7 returned their permits and 5 indicated that they fished.

o Of the 56 permits issued in Eagle, 55 returned their permits and 32 indicated that they fished.

p Other includes residents of Manley, Minto, Nenana, and the Upper Tanana River drainage villages of Northway and Tok, who obtained a household permit to fish in a Yukon River permit required area. Of the 10 permits issued, 10 returned their permits and 5 indicated that they fished.

q Of the 23 permits issued in Manley, 21 returned their permits and 16 fished.

r Of the 77 permits issued in Minto, 63 returned their permits and 33 indicated that they fished. Includes 32 Tolovana River Pike permits.

s Of the 48 permits issued in Nenana, 2 were personal use permits and 46 were subsistence permits, 46 returned their permits and 32 indicated that they fished. Includes 3 households that obtained a permit to fish on the Kantishna River.

t Of the 9 permits issued in Healy, 9 returned their permits and 4 indicated that they fished. Includes one household that obtained a permit to fish on the Kantishna River.

u Fairbanks North Star Borough fishermen who obtained a permit to fish the Tanana River. Of the 182 permits issued, 125 were personal use permits and 57 were subsistence permits, 175 returned their permits and 94 indicated that they fished. Includes 38 Tolovana River Pike permits. Includes 6 households that obtained personal use salmon permits and 2 switched to whitefish permits and 4 switched to Tolavana River Pike permits.

v Of the 5 permits issued for the Tanana River in Delta, 4 were personal use permits one was subsistence, 5 returned their permits and 5 indicated that they fished.

w Other includes residents of Anchorage, Cantwell, Mountain Village, and the Upper Tanana River drainage villages, Dot Lake, Northway, Slana, Tanacross, and Tok who fished in the Tanana River. Of the 41 permits issued, 1 was a personal use permit and 40 were subsistence permits, 37 returned their permits and 12 indicated that they fished.

x Test fish given away for subsistence use.

Table 3. Yukon River drainage commercial salmon sales and estimated harvest by district and country, 1997. a

Districts	Number of Fishermen c	Chinook Sold in Round	Chinook Pounds of Roe	Chinook Estimated Harvest b	Summer Chum Sold in Round	Summer Chum Pounds of Roe	Summer Chum Estimated Harvest b	Fall Chum Sold in Round	Fall Chum Pounds of Roe	Fall Chum Estimated Harvest b	Coho Sold in Round	Coho Pounds of Roe	Coho Estimated Harvest b
1	463	66,384	0	66,384	59,915	0	59,915	27,483	0	27,483	21,450	0	21,450
2	221	39,363	0	39,363	18,242	0	18,242	24,326	0	24,326	13,056	0	13,056
Subtotal	640	105,747	0	105,747	78,157	0	78,157	51,809	0	51,809	34,506	0	34,506
Subtotal District 3	0	-		-	-	-	-	-	-	-	-		-
Total Lower Yukon	640	105,747	0	105,747	78,157	0	78,157	51,809	0	51,809	34,506	0	34,506
Anvik River	9	0	0	0	0	13,067	13,548	0	0	0	0	0	0
4-A	24	0	0	0	0	56,301	100,389 d	0	0	0	0	0	0
4-BC	12	1,450	14	1,457	2,062	4,863	10,734 d	2,458	0	2,458	814	0	814
Subtotal District 4	39	1,450	14	1,457	2,062	74,231	124,671 d	2,458	0	2,458	814	0	814
5-ABC	27	3,071	0	3,071	125	0	125	1,595	1,194	3,069	0	0	0
5-D	4	607	0	607	12	0	12	851	0	851	0	0	0
Subtotal District 5	31	3,678	0	3,678	137	0	137	2,446	1,194	3,920	0	0	0
Subtotal District 6	15	1,966	3,211	2,728	14,886	9,036	25,287	-	-	-	-	-	-
Total Upper Yukon	85	7,094	3,225	7,863	17,085	83,267	150,095	4,904	1,194	6,378	814	0	814
Total Alaska	725	112,841	3,225	113,610	95,242	83,267	228,252	56,713	1,194	58,187	35,320	0	35,320
Total Canada		5,311	0	5,311	-	-	-	7,874	0	7,874	-	-	-
Grand Total	725	118,152	3,225	118,921	95,242	83,267	228,252	64,587	1,194	66,061	35,320	0	35,320

a Does not include ADF&G test fishery sales.

b Unless otherwise noted, estimated harvest is the number of fish sold in the round plus the estimated number of females harvested to produce roe sold (pounds of roe sold divided by weighted average roe weight per female).

c Number of unique permits fished by district, subdistrict or area. Totals by area may not add up due to transfers between districts or subdistricts.

d Estimated harvest includes both males and females harvested to produce roe sold (pounds of roe sold divided by weighted average roe weight per female divided by average percent females in the harvest). Summer chum salmon sold in the round in District 4 are assumed to be males and are included in the estimated harvest calculation.

Table 4. Commercial chinook salmon sales and estimated harvest by area and district, Yukon River drainage, 1961-1997.

	Lower Yukon Area [b]				Upper Yukon Area [a]												Total
					District 4			District 5			District 6			Subtotal			
Year	District 1	District 2	District 3	Subtotal	Number	Roe	Estimated Harvest [c]	Number	Roe	Estimated Harvest [c]	Number	Roe	Estimated Harvest [c]	Number	Roe	Estimated Harvest [c]	Estimated Harvest [c]
1961	84,466	29,026	4,368	117,860	-	-	-	-	-	-	-	-	-	1,804	-	1,804	119,664
1962	67,099	22,224	4,687	94,010	-	-	-	-	-	-	-	-	-	724	-	724	94,734
1963	85,004	24,221	7,020	116,245	-	-	-	-	-	-	-	-	-	803	-	803	117,048
1964	67,555	20,248	4,705	92,508	-	-	-	-	-	-	-	-	-	1,081	-	1,081	93,587
1965	89,268	23,763	3,204	116,235	-	-	-	-	-	-	-	-	-	1,863	-	1,863	118,098
1966	70,788	18,927	3,612	91,327	-	-	-	-	-	-	-	-	-	1,988	-	1,988	93,315
1967	104,350	20,239	3,618	128,207	-	-	-	-	-	-	-	-	-	1,449	-	1,449	129,656
1968	79,465	21,392	4,543	105,400	-	-	-	-	-	-	-	-	-	1,126	-	1,126	106,526
1969	71,688	14,756	3,595	90,039	-	-	-	-	-	-	-	-	-	988	-	988	91,027
1970	56,648	17,141	3,705	77,494	-	-	-	-	-	-	-	-	-	1,651	-	1,651	79,145
1971	86,042	19,226	3,490	108,758	-	-	-	-	-	-	-	-	-	1,749	-	1,749	110,507
1972	70,052	17,855	3,841	91,748	-	-	-	-	-	-	-	-	-	1,092	-	1,092	92,840
1973	56,981	13,859	3,204	74,044	-	-	-	-	-	-	-	-	-	1,309	-	1,309	75,353
1974 [d]	71,840	17,948	3,480	93,268	685	-	685	2,663	-	2,663	1,473	-	1,473	4,821	-	4,821	98,089
1975	44,585	11,315	4,177	60,077	389	-	389	2,872	-	2,872	500	-	500	3,761	-	3,761	63,838
1976	62,410	16,556	4,148	83,114	409	-	409	3,151	-	3,151	1,102	-	1,102	4,662	-	4,662	87,776
1977	69,915	16,722	3,965	90,802	985	-	985	4,162	-	4,162	1,008	-	1,008	6,155	-	6,155	96,757
1978	59,006	32,924	2,916	94,846	608	-	608	3,079	-	3,079	635	-	635	4,322	-	4,322	99,168
1979	75,007	41,498	5,018	121,523	1,989	-	1,989	3,389	-	3,389	772	-	772	6,150	-	6,150	127,673
1980	90,382	50,004	5,240	145,626	1,521	-	1,521	4,891	-	4,891	1,947	-	1,947	8,359	-	8,359	153,985
1981	99,506	45,781	4,023	149,310	1,347	-	1,347	6,374	-	6,374	987	-	987	8,708	-	8,708	158,018
1982	74,450	39,132	2,609	116,191	1,087	-	1,087	5,385	-	5,385	981	-	981	7,453	-	7,453	123,644
1983	95,457	43,229	4,106	142,792	601	-	601	3,606	-	3,606	911	-	911	5,118	-	5,118	147,910
1984	74,671	38,697	3,039	114,407	961	-	961	3,669	-	3,669	867	-	867	5,497	-	5,497	119,904
1985	90,011	48,365	2,588	140,964	684	-	684	3,418	-	3,418	1,142	-	1,142	5,224	-	5,224	146,188
1986	53,035	41,849	901	95,785	502	-	502	2,733	-	2,733	950	-	950	4,185	-	4,185	99,970
1987	76,643	47,458	2,039	126,140	1,524	-	1,524	3,758	-	3,758	3,338	-	3,338	8,620	-	8,620	134,760
1988 [f]	56,120	35,120	1,767	93,007	3,159	-	3,159	3,436	-	3,436	762	-	762	7,357	-	7,357	100,364
1989	61,570 [g]	33,166	1,645	96,381	2,790	-	2,790	3,286	-	3,286	1,741	-	1,741	7,817	-	7,817	104,198
1990	51,199 [h]	33,061	2,341	86,601	3,536	8	3,538	3,353	47	3,365	1,757	1,676	2,156	8,646	1,731	9,059	95,660
1991 [i]	56,332	39,260	2,344	97,936	2,446	2,222	3,582	3,810	62	3,826	686	1,545	1,072	6,942	3,829	8,480	106,416
1992 [k]	74,212	38,139	1,819	114,170	1,851	2,273	2,394	3,852	7	3,855	572	884	753	6,075	3,164	7,002	121,172
1993	49,286	37,293	1,501	88,080	1,349	701	1,577	3,008	0	3,008	1,113	1,313	1,445	5,470	2,014	6,030	94,110
1994	62,241	41,692	1,114	105,047	2,216	564	2,443	3,739	10	3,744	2,135	1,820	2,606	8,090	2,394	8,793	113,840
1995	76,106	41,458	0	117,564	262	626	499	3,242	0	3,242	1,660	4,731	2,747	5,164	5,357	6,488	124,052
1996	56,642	30,209	0	86,851	45	202	137	2,497	518	2,757	278	750	447	2,820	1,470	3,341	90,192
1997	66,384	39,363	0	105,747	1,450	14	1,457	3,678	0	3,678	1,966	3,211	2,728	7,094	3,225	7,863	113,610
5 Yr Avg. 1987-1991	60,373	37,613	2,027	100,013	2,691	-	2,919	3,529	-	3,534	1,657	-	1,814	7,876	-	8,267	108,280
5 Yr Avg. 1992-1996	63,697	37,758	887	102,342	1,105	873	1,410	3,268	107	3,321	1,152	1,900	1,600	5,524	2,880	6,331	108,673

[a] Harvest reported in numbers of fish sold in the round and pounds of roe sold. Since 1990, efforts were made to separate chinook roe from summer chum roe. Does not include department test fish sales.

[b] All fish sold in the round. Includes department test fish sales prior to 1988.

[c] The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold.

[d] In 1974, District 4 was subdivided to include Districts 5 and 6.

[f] Includes the illegal sales of 653 chinook salmon in District 5, and 2,136 chinook salmon in District 6.

[g] Includes the illegal sales of 3,211 chinook salmon.

[h] Includes the illegal sales of 1,101 chinook salmon.

[i] Includes the illegal sales of 2,711 chinook salmon in District 1, and 284 chinook salmon in District 2.

[k] Includes the illegal sales of 1,218 chinook salmon in District 1, and 207 chinook salmon in District 2.

Table 5. Commercial summer chum salmon sales and estimated harvest by area and district, Yukon River drainage in Alaska, 1967-1997.

	Lower Yukon Area							
			District 3 [a]			Subtotal		
Year	District 1 [b]	District 2 [b]	Number	Roe	Estimated Harvest [c]	Number	Roe	Estimated Harvest [c]
1967	9,453	1,425	57			10,935	-	10,935
1968	12,995	1,407	68			14,470	-	14,470
1969	56,886	5,080	-			61,966	-	61,966
1970	117,357	19,649	-			137,006	-	137,006
1971	93,928	6,112	50			100,090	-	100,090
1972	114,234	20,907	527			135,668	-	135,668
1973	221,644	63,402	463			285,509	-	285,509
1974 [d]	466,004	74,152	1,721			541,877	-	541,877
1975	418,323	99,139	-			517,462	-	517,462
1976	273,204	99,190	9,802			382,196	-	382,196
1977	250,652	105,679	3,412			359,743	-	359,743
1978	393,785	227,548	27,003			648,336	-	648,336
1979	369,934	172,838	40,015			582,787	-	582,787
1980	391,252	308,704	44,782			744,738	-	744,738
1981	507,158	351,878	54,471			913,507	-	913,507
1982	249,516	182,344	4,086			435,946	-	435,946
1983	451,164	248,092	14,600			713,856	-	713,856
1984	292,676	236,931	1,087			530,694	-	530,694
1985	247,486	188,099	1,792			437,377	-	437,377
1986	381,127	288,427	442			669,996	-	669,996
1987	222,898	174,876	3,501			401,275	-	401,275
1988	645,322	424,461	13,965			1,083,748	-	1,083,748
1989	544,373 [f]	343,032	7,578			894,983	-	894,983
1990	146,725	131,755	643			279,123	-	279,123
1991	140,470 [h]	175,149	8,912			324,531	-	324,531
1992 [i]	177,329	147,129	65			324,523	-	324,523
1993	73,659	19,332	463			93,454	-	93,454
1994	42,332	12,869	35			55,236	-	55,236
1995	142,266	83,817	0			226,083	-	226,083
1996	92,506	30,727	0	935	1,534	123,233	935	124,767
1997	59,915	18,242	0	0	0	78,157	0	78,157
5 Yr Avg. 1987-1991	339,958	249,855	6,920	-	-	596,732	-	596,732
5 Yr Avg. 1992-1996	105,618	58,775	113	-	-	164,506	-	164,813

-Continued-

Table 5. (page 2 of 2).

	Upper Yukon Area [a]															
	District 4			District 5			District 6			Subtotal			Total			Total
Year	Number	Roe	Estimated Harvest [c]	Number	Roe	Estimated Harvest [c]	Number	Roe	Estimated Harvest [c]	Number	Roe	Estimated Harvest [c]	Number	Roe	Estimated Harvest [c]	Estimated Harvest
1967	-	-	-	-	-	-	-	-	-	0	0	0	10,935	0	10,935	10,935
1968	-	-	-	-	-	-	-	-	-	0	0	0	14,470	0	14,470	14,470
1969	-	-	-	-	-	-	-	-	-	0	0	0	61,966	0	61,966	61,966
1970	-	-	-	-	-	-	-	-	-	0	0	0	137,006	0	137,006	137,006
1971	-	-	-	-	-	-	-	-	-	0	0	0	100,090	0	100,090	100,090
1972	-	-	-	-	-	-	-	-	-	0	0	0	135,668	0	135,668	135,668
1973	-	-	-	-	-	-	-	-	-	0	0	0	285,509	0	285,509	285,509
1974 [d]	27,866	-	27,866	6,831	-	6,831	13,318	-	13,318	48,015	0	48,015	589,892	0	589,892	589,892
1975	165,054	-	165,054	12,997	-	12,997	14,782	-	14,782	192,833	0	192,833	710,295	0	710,295	710,295
1976	211,307	-	211,307	774	-	774	6,617	-	6,617	218,698	0	218,698	600,894	0	600,894	600,894
1977	169,541	-	169,541	1,274	-	1,274	4,317	-	4,317	175,132	0	175,132	534,875	0	534,875	534,875
1978	364,184	16,920	381,104	4,892	605	5,497	34,814	8,236	43,050	403,890	25,761	429,651	1,052,226	25,761	1,077,987	1,077,987
1979	169,430	35,317	204,747	8,608	1,009	9,617	18,491	3,891	22,382	196,529	40,217	236,746	779,316	40,217	819,533	819,533
1980	147,560	135,824	283,384	456	-	456	35,855	3,282	39,137	183,871	139,106	322,977	928,609	139,106	1,067,715	1,067,715
1981	59,718	187,032	330,445	1,236	49	1,285	32,477	1,987	34,464	93,431	189,068	366,194	1,006,938	189,068	1,279,701	1,279,701
1982	3,647	151,281	257,719	213	21	234	21,597	1,517	23,114	25,457	152,819	281,067	461,403	152,819	717,013	717,013
1983	6,672	148,125	255,388	42	1,856	1,898	24,309	18	24,327	31,023	149,999	281,613	744,879	149,999	995,469	995,469
1984	1,009	166,842	278,070	645	47	692	56,249	335	56,584	57,903	167,224	335,346	588,597	167,224	866,040	866,040
1985	12,007	247,085	427,483	700	-	700	66,913	1,540	68,453	79,620	248,625	496,636	516,997	248,625	934,013	934,013
1986	300	269,545	465,535	690	-	690	50,483	2,146	52,629	51,473	271,691	518,854	721,469	271,691	1,188,850	1,188,850
1987	29,991	121,474	209,800	362	44	406	10,610	450	11,060	40,963	121,968	221,266	442,238	121,968	622,541	622,541
1988	24,051	254,526	490,074	722	363	1,085	40,129	1,646	41,775	64,902	256,535	532,934	1,148,650	256,535	1,616,682	1,616,682
1989	18,554	283,305	510,244	154	373	527	42,115	4,871	46,986	60,823	288,549	557,757	955,806	288,549	1,452,740	1,452,740
1990	12,364	105,723	222,550	11	594	671	11,127 [g]	3,059	14,833	23,502	109,376	238,054	302,625	109,376	517,177	517,177
1991	6,381	137,232	309,644	4	28	35	18,197	4,716	23,892	24,582	141,976	333,571	349,113	141,976	658,102	658,102
1992 [i]	2,659	110,809	211,396	102	295	430	5,029	1,892	7,228	7,790	112,996	219,054	332,313	112,996	543,577	543,577
1993	27	22,447	42,957	0	0	0	3,041	515	3,705	3,068	22,962	46,662	98,522	22,962	140,116	140,116
1994	3,611	89,717	171,607	229	212	464	21,208	7,828	31,434	25,048	97,757	203,505	80,284	97,757	258,741	258,741
1995	8,873	281,074	554,587	107	188	316	24,711	9,475	37,428	33,691	290,737	592,331	259,774	290,737	818,414	818,414
1996	0	295,190	510,240	0	302	336	22,360	18,332	46,890	22,360	313,824	557,466	145,593	314,759	682,233	682,233
1997	2,062	74,231	124,671	137	0	137	14,886	9,036	25,287	17,085	83,267	150,095	95,242	83,267	228,252	228,252
5 Yr Avg. 1987-1991	18,268	180,452	348,462	251	280	545	24,436	2,948	27,709	42,954	183,681	376,716	639,686	183,681	973,448	973,448
5 Yr Avg. 1992-1996	3,034	159,847	298,157	88	199	309	15,270	7,608	25,337	18,391	167,655	323,804	182,897	167,842	488,616	488,616

[a] Harvest reported in numbers of fish sold in the round and pounds of roe. Roe sales may include some pink and chinook salmon roe. Does not include department test fish sales.

[b] All sales are fish in the round in District 1 and 2. Includes department test fish sales prior to 1988.

[c] The estimated harvest is the fish sold in the round plus the estimated number of females caught to produce the roe sold. In addition, the estimated harvest for Districts 3 and 4 includes the estimated number of unsold males harvested.

[d] In 1974, District 4 was subdivided to include Districts 5 and 6.

[f] Includes the illegal sales of 150 summer chum salmon in District 1.

[g] Does not include 1,233 female summer chum salmon sold in Subdistrict 6-C with roe extracted and roe sold separately. These fish are included in estimated harvest to produce roe sold.

[h] Includes the illegal sales of 1,023 summer chum salmon.

[i] Includes the illegal sales of 31 summer chum salmon in District 1, and 91 summer chum salmon in District 2.

Table 6. Commercial fall chum salmon sales and estimated harvest by area and district, Yukon River drainage, 1961-1997.

					Upper Yukon Area [a]												
	Lower Yukon Area [b]				District 4			District 5			District 6			Subtotal			Total
Year	District 1	District 2	District 3	Subtotal	Numbers	Roe	Estimated Harvest [c]	Numbers	Roe	Estimated Harvest [c]	Numbers	Roe	Estimated Harvest [c]	Numbers	Roe	Estimated Harvest [c]	Estimated Harvest
1961	42,461	-	-	42,461	-	-	-	-	-	-	-	-	-	0	0	0	42,461
1962	53,116	-	-	53,116	-	-	-	-	-	-	-	-	-	0	0	0	53,116
1963	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0
1964	8,347	-	-	8,347	-	-	-	-	-	-	-	-	-	0	0	0	8,347
1965	22,936	-	-	22,936	-	-	-	-	-	-	-	-	-	381	0	381	23,317
1966	69,836	-	1,209	71,045	-	-	-	-	-	-	-	-	-	0	0	0	71,045
1967	36,451	-	1,823	38,274	-	-	-	-	-	-	-	-	-	0	0	0	38,274
1968	49,857	-	3,068	52,925	-	-	-	-	-	-	-	-	-	0	0	0	52,925
1969	128,866	-	1,722	130,588	-	-	-	-	-	-	-	-	-	722	0	722	131,310
1970	200,306	4,858	3,285	208,449	-	-	-	-	-	-	-	-	-	1,146	0	1,146	209,595
1971	188,533	-	-	188,533	-	-	-	-	-	-	-	-	-	1,061	0	1,061	189,594
1972	136,711	12,898	1,313	150,922	-	-	-	-	-	-	-	-	-	1,254	0	1,254	152,176
1973	173,783	45,304	-	219,087	-	-	-	-	-	-	-	-	-	13,003	0	13,003	232,090
1974 [d]	176,036	53,540	552	230,128	9,213	-	9,213	23,551	-	23,551	26,884	-	26,884	59,648	0	59,648	289,776
1975	158,183	51,666	5,590	215,439	13,666	-	13,666	27,212	-	27,212	18,692	-	18,692	59,570	0	59,570	275,009
1976	105,851	21,212	4,250	131,313	1,742	-	1,742	5,387	-	5,387	17,948	-	17,948	25,077	0	25,077	156,390
1977	131,758	51,994	15,851	199,603	13,980	-	13,980	25,730	-	25,730	18,673	-	18,673	58,383	0	58,383	257,986
1978	127,947	51,646	11,527	191,120	10,988	1,721	12,709	21,016	5,220	26,236	13,259	3,687	16,946	45,263	10,628	55,891	247,011
1979	109,406	94,042	25,955	229,403	48,899	3,199	52,098	47,459	8,097	55,556	34,185	7,170	41,355	130,543	18,466	149,009	378,412
1980	106,829	83,881	13,519	204,229	27,978	4,347	32,325	41,771	605	42,376	19,452	68	19,520	89,201	5,020	94,221	298,450
1981	167,834	154,883	19,043	341,760	12,082	1,311	13,393	86,620	6,955	93,575	25,989	3,019	29,008	124,691	11,285	135,976	477,736
1982	97,484	96,581	5,815	199,880	3,894	167	4,061	13,593	42	13,635	6,820	596	7,416	24,307	805	25,112	224,992
1983	124,371	85,645	10,018	220,034	4,482	1,963	6,445	43,993	0	43,993	34,089	3,101	37,190	82,564	5,064	87,628	307,662
1984	78,751	70,803	6,429	155,983	7,625	2,215	9,840	24,060	57	24,117	20,564	56	20,620	52,249	2,328	54,577	210,560
1985	129,948	40,490	5,164	175,602	24,452	2,525	26,977	25,338	0	25,338	42,352	0	42,352	92,142	2,525	94,667	270,269
1986	59,352	51,307	2,793	113,452	2,045	0	2,045	22,053	395	22,448	1,892	182	2,074	25,990	577	26,567	140,019
1987	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	44,690	31,845	2,090	78,825	15,662	1,421	17,083	16,989	0	16,989	21,844	1,806	23,650	54,495	3,227	57,722	136,547
1989	74,235	97,558	15,332	187,125	11,776	3,407	15,183	18,215	3,989	22,204	49,090	7,353	56,443	79,081	14,749	93,830	280,955
1990	25,269	37,077	3,715	66,061	4,989	2,351	8,166	7,778	1,058	8,976	43,182 [f]	7,535	50,975	55,949	10,944	68,117	134,178
1991	59,724	102,628	9,213	171,565	3,737	1,616	6,091	27,355	3,625	32,114	28,185	14,154	44,448	59,287	19,395	82,653	254,218
1992	0	0	0	0	0	0	0	0	0	0	15,721	2,806	19,022	15,721	2,806	19,022	19,022
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	3,630	0	3,630	1	3,276	4,369	3,631	3,276	7,999	7,999
1995	79,345	90,831	0	170,176	2,924	4,126	8,731	9,778	18,815	30,033	67,855	9,560	74,117	80,557	32,501	112,881	283,057
1996	33,629	29,651	0	63,280	2,918	0	2,918	11,878	8,498	21,858	10,266	6,173	17,574	25,062	14,671	42,350	105,630
1997	27,483	24,326	0	51,809	2,458	0	2,458	2,446	1,194	3,920	0	0	0	4,904	1,194	6,378	58,187
5 Yr. Avg 1987-1991	40,824	53,822	6,070	100,715	7,233	1,759	9,305	14,067	1,734	16,057	28,462	6,170	35,103	49,762	9,663	60,464	161,180
5 Yr. Avg 1992-1996	22,595	24,096	0	46,691	1,168	825	2,330	5,057	5,463	11,104	18,769	4,363	23,016	24,994	10,651	36,450	83,142

[a] Sales reported in numbers of fish sold in the round and pounds of unprocessed roe, which may include small amounts of coho salmon roe. Since 1990, efforts were made to separate coho roe from fall chum roe. Does not include department test fish sales.

[b] All fish sold in the round. Includes department test fish sales prior to 1988.

[c] The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold

[d] In 1974, District 4 was subdivided to include Districts 5 and 6.

[f] Does not include 884 female fall chum salmon sold in Subdistrict 6-C with roe extracted and roe sold separately. Females are accounted for in the estimated harvest to produce roe sold.

Table 7. Commercial coho salmon sales and estimated harvest by area and district, Yukon River drainage in Alaska, 1961-1997.

	Lower Yukon Area [b]				Upper Yukon Area [a]												
					District 4			District 5			District 6			Subtotal			Total
Year	District 1	District. 2	District 3	Subtotal	Number	Roe	Estimated Harvest [c]	Number	Roe	Estimated Harvest [c]	Number	Roe	Estimated Harvest [c]	Number	Roe	Estimated Harvest [c]	Estimated Harvest
1961	2,855	-	-	2,855	-	-	-	-	-	-	-	-	-	-	-	-	2,855
1962	22,926	-	-	22,926	-	-	-	-	-	-	-	-	-	-	-	-	22,926
1963	5,572	-	-	5,572	-	-	-	-	-	-	-	-	-	-	-	-	5,572
1964	2,446	-	-	2,446	-	-	-	-	-	-	-	-	-	-	-	-	2,446
1965	350	-	-	350	-	-	-	-	-	-	-	-	-	-	-	-	350
1966	19,254	-	-	19,254	-	-	-	-	-	-	-	-	-	-	-	-	19,254
1967	9,925	-	1,122	11,047	-	-	-	-	-	-	-	-	-	-	-	-	11,047
1968	13,153	-	150	13,303	-	-	-	-	-	-	-	-	-	-	-	-	13,303
1969	13,989	-	1,009	14,998	-	-	-	-	-	-	-	-	-	-	-	95	15,093
1970	12,632	-	-	12,632	-	-	-	-	-	-	-	-	-	-	-	556	13,188
1971	12,165	-	-	12,165	-	-	-	-	-	-	-	-	-	-	-	38	12,203
1972	21,705	508	-	22,211	-	-	-	-	-	-	-	-	-	-	-	22	22,233
1973	34,860	1,781	-	36,641	-	-	-	-	-	-	-	-	-	-	-	0	36,641
1974 [d]	13,713	176	-	13,889	0	-	0	1,409	-	1,409	1,479	-	1,479	2,888	-	2,888	16,777
1975	2,288	200	-	2,488	0	-	0	5	-	5	53	-	53	58	-	58	2,546
1976	4,064	17	-	4,081	0	-	0	0	-	0	1,103	-	1,103	1,103	-	1,103	5,184
1977	31,720	5,319	538	37,577	0	-	0	2	-	2	1,284	-	1,284	1,286	-	1,286	38,863
1978	16,460	5,835	758	23,053	32	-	32	1	-	1	3,066	-	3,066	3,099	-	3,099	26,152
1979	11,369	2,850	-	14,219	155	-	155	0	-	0	2,791	-	2,791	2,946	-	2,946	17,165
1980	4,829	2,660	-	7,489	30	-	30	0	-	0	1,226	-	1,226	1,256	-	1,256	8,745
1981	13,129	7,848	419	21,396	0	-	0	0	-	0	2,284	-	2,284	2,284	-	2,284	23,680
1982	15,115	14,179	87	29,381	15	-	15	0	-	0	7,780	-	7,780	7,795	-	7,795	37,176
1983	4,595	2,557	-	7,152	0	-	0	0	-	0	6,168	-	6,168	6,168	-	6,168	13,320
1984	29,472	43,064	621	73,157	1,095	-	1,095	0	-	0	7,688	-	7,688	8,783	-	8,783	81,940
1985	27,676	17,125	171	44,972	938	-	938	0	-	0	11,762	-	11,762	12,700	-	12,700	57,672
1986	24,824	21,197	793	46,814	0	-	0	0	-	0	441	-	441	441	-	441	47,255
1987	0	0	0	0	0	-	0	0	-	0	0	-	0	0	-	0	0
1988	36,028	34,758	1,419	72,205	2	-	2	8	-	8	13,972	-	13,972	13,982	-	13,982	86,187
1989	22,987	38,402	3,988	65,377	3	-	3	84	-	84	16,084	-	16,084	16,171	-	16,171	81,548
1990	12,160	16,405	918	29,483	0	-	0	0	-	0	11,549 [f]	4,042	14,804	11,549	4,042	14,804	44,287
1991	54,095	40,898	1,905	96,898	14	0	14	0	0	0	6,268	4,299	9,774	6,282	4,299	9,788	106,686
1992	0	0	0	0	0	0	0	0	0	0	6,556	1,680	7,979	6,556	1,680	7,979	7,979
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	0	120	5,588	4,451	120	5,588	4,451	4,451
1995	21,625	18,488	0	40,113	0	0	0	0	0	0	5,826	2,229	6,900	5,826	2,229	6,900	47,013
1996	27,705	20,974	0	48,679	161	0	161	0	0	0	3,803	4,829	7,142	3,964	4,829	7,303	55,982
1997	21,450	13,056	0	34,506	814	0	814	0	0	0	0	0	0	814	0	814	35,320
5 Yr Ave. 1987-1991	25,054	26,093	1,646	52,793	4	0	4	18	0	18	9,575	-	10,927	9,597	-	10,949	63,742
5 Yr Ave. 1992-1996	9,866	7,892	0	17,758	32	-	32	0	0	0	3,261	2,865	5,294	3,293	2,865	5,327	23,085

[a] Sales reported in numbers of fish sold in the round and pounds of roe. Since 1990, efforts were made to seperate coho and fall chum salmon roe. Does not include department test fish sales.
[b] All sales are fish in the round. Includes department test fish sales prior to 1988.
[c] The estimated harvest is the fish sold in the round plus the estimated number of females caught to produce the roe sold.
[d] In 1974, District 4 was subdivided to include Districts 5 and 6.
[f] Does not include 438 female coho salmon sold in Distrrict 6-C with roe extracted and roe sold separately. These fish are included in estimated harvest to produce roe sold.

Table 8. Value of commercial salmon fishery to Yukon Area fishermen, 1977-1997.

	Chinook					Summer Chum						Fall Chum					Coho					
	Lower Yukon		Upper Yukon			Lower Yukon			Upper Yukon			Lower Yukon		Upper Yukon			Lower Yukon		Upper Yukon			Total
Year	$/lb	Value	$/lb	$/Roe	Value	$/lb	$/Roe	Value	$/lb	$/Roe	Value	$/lb	Value	$/lb	$/Roe	Value	$/lb	Value	$/lb	$/Roe	Value	Value
1977	0.85	1,841,033	1.37		148,766	0.40		1,007,280	0.27	2.66	306,481	0.45	718,571	0.22		102,170	0.50	140,914	0.27		2,251	4,267,466
1978	0.90	2,048,674	0.87		66,472	0.45		2,071,434	0.24	N/A	655,738	0.47	691,854	0.25		103,091	0.60	96,823	0.24		6,105	5,740,191
1979	1.09	2,763,433	1.00		124,230	0.52		2,242,564	0.25	3.00	444,924	0.68	1,158,485	0.29		347,814	0.80	83,466	0.25		6,599	7,171,515
1980	1.04	3,409,105	0.85		113,662	0.20		1,027,738	0.23	2.50	627,249	0.28	394,162	0.27		198,088	0.36	17,374	0.29		2,374	5,789,752
1981	1.20	4,420,669	1.00		206,380	0.40		2,741,178	0.20	3.00	699,876	0.55	1,503,744	0.35		356,805	0.60	87,385	0.35		4,568	10,020,605
1982	1.41	3,768,107	1.02		182,699	0.40		1,237,735	0.18	2.75	452,837	0.55	846,492	0.28		53,258	0.69	135,828	0.37		18,786	6,675,742
1983	1.40	4,093,562	1.08		105,584	0.34		1,734,270	0.16	1.66	281,883	0.34	591,011	0.19		128,950	0.35	17,497	0.31		11,472	6,964,229
1984	1.50	3,510,923	0.95		102,354	0.26		926,922	0.23	1.78	382,776	0.32	374,359	0.26		103,417	0.50	256,050	0.24		12,823	5,669,624
1985	1.50	4,294,432	0.86		82,644	0.35		1,032,700	0.23	1.94	593,801	0.47	634,616	0.25		178,125	0.53	176,254	0.33		26,797	7,019,369
1986	1.63	3,165,078	0.89		73,363	0.38		1,746,455	0.22	2.08	634,091	0.49	399,321	0.14		30,309	0.71	211,942	0.21		556	6,261,115
1987	1.98	5,428,933	0.79		136,196	0.48		1,313,618	0.19	2.22	323,611	-	0	-		0	-	0	-		0	7,202,358
1988	2.97	5,463,600	1.04		142,284	0.66		5,001,100	0.23	4.33	1,213,991	1.01	638,700	0.32		151,300	1.38	734,400	0.37		34,116	13,379,691
1989	2.77	5,181,700	0.84		108,178	0.34		2,217,700	0.24	4.41	1,377,117	0.50	713,400	0.28		223,996	0.66	323,300	0.35		33,959	10,179,350
1990	2.84	4,820,859	0.72		105,295	0.24		497,571	0.11	4.41	506,611	0.45	238,165	0.34		174,965	0.66	137,302	0.34		37,026	6,517,794
1991	3.70	7,128,300	0.70	2.92	97,140	0.36		782,300	0.18	4.21	627,177	0.34	438,310	0.23	3.56	157,831	0.44	300,182	0.30	2.50	21,556	9,552,796
1992	4.12	9,957,002	0.91	2.82	168,999	0.27		606,976	0.30	4.53	525,204	-	0	0.39	4.50	54,161	-	0	0.39	2.18	19,529	11,331,871
1993	2.70	4,884,044	1.06	5.52	113,217	0.37		226,772	0.35	8.53	203,762	-	0	-	-	0	-	0	-	-	0	5,427,794
1994	2.07	4,169,270	0.92	3.11	124,270	0.21		79,206	0.20	3.77	396,685	-	0	0.16	1.50	8,517	-	0	0.48	1.50	8,739	4,786,687
1995	2.09	5,317,508	0.77	2.64	87,059	0.16		241,598	0.13	3.57	1,060,322	0.15	185,036	0.13	2.96	187,571	0.29	80,019	0.14	2.51	11,292	7,150,405
1996	1.95	3,491,582	0.95	2.57	47,282	0.09	2.96	89,020	0.07	3.05	966,277	0.10	48,579	0.13	1.71	45,438	0.26	96,795	0.09	2.16	13,020	4,797,993
1997	2.46	5,450,433	0.97	1.62	110,713	0.10		56,535	0.07	1.08	96,806	0.22	86,526	0.17	1.75	7,252	0.32	79,973	0.20		1,062	5,889,300
5 Yr Avg 1992-1996	2.59	5,563,881	0.92		108,165	0.22	2.96	248,714	0.21	4.69	630,450	0.13	46,723	0.20	2.67	55,137	0.28	35,363	0.28	2.09	10,516	6,698,950

Table 9. Canadian catch of Yukon River chinook salmon, 1961-1997.

Year	Mainstem Yukon River Harvest						Porcupine River Aboriginal Fishery Harvest	Total Canadian Harvest
	Commercial	Domestic	Aboriginal Fishery	Sport [a]	Combined Non-Commercial	Total		
1961	3,446		9,300		9,300	12,746	500	13,246
1962	4,037		9,300		9,300	13,337	600	13,937
1963	2,283		7,750		7,750	10,033	44	10,077
1964	3,208		4,124		4,124	7,332	76	7,408
1965	2,265		3,021		3,021	5,286	94	5,380
1966	1,942		2,445		2,445	4,387	65	4,452
1967	2,187		2,920		2,920	5,107	43	5,150
1968	2,212		2,800		2,800	5,012	30	5,042
1969	1,640		957		957	2,597	27	2,624
1970	2,611		2,044		2,044	4,655	8	4,663
1971	3,178		3,260		3,260	6,438	9	6,447
1972	1,769		3,960		3,960	5,729		5,729
1973	2,199		2,319		2,319	4,518	4	4,522
1974	1,808	406	3,342		3,748	5,556	75	5,631
1975	3,000	400	2,500		2,900	5,900	100	6,000
1976	3,500	500	1,000		1,500	5,000	25	5,025
1977	4,720	531	2,247		2,778	7,498	29	7,527
1978	2,975	421	2,485		2,906	5,881		5,881
1979	6,175	1,200	3,000		4,200	10,375		10,375
1980	9,500	3,500	7,546	300	11,346	20,846	2000	22,846
1981	8,593	237	8,879	300	9,416	18,009	100	18,109
1982	8,640	435	7,433	300	8,168	16,808	400	17,208
1983	13,027	400	5,025	300	5,725	18,752	200	18,952
1984	9,885	260	5,850	300	6,410	16,295	500	16,795
1985	12,573	478	5,800	300	6,578	19,151	150	19,301
1986	10,797	342	8,625	300	9,267	20,064	300	20,364
1987	10,864	330	6,069	300	6,699	17,563	51	17,614
1988	13,217	282	7,178	650	8,110	21,327	100	21,427
1989	9,789	400	6,930	300	7,630	17,419	525	17,944
1990	11,324	247	7,109	300	7,656	18,980	258	19,238
1991	10,906	227	9,011	300	9,538	20,444	163	20,607
1992	10,877	277	6,349	300	6,926	17,803	100	17,903
1993	10,350	243	5,576	300	6,119	16,469	142	16,611
1994	12,028	373	8,089	300	8,762	20,790	428	21,218
1995	11,146	300	7,945	700	8,945	20,091	796	20,887
1996	10,164	141	8,451	790	9,382	19,546	66	19,612
1997 [b]	5,311	121	8,942	1,230	10,293	15,604	496	16,100
Average								
1961-86	4,930	701	4,536	300	4,967	9,897	231	9,693
1987-91	11,220	297	7,259	370	7,927	19,147	247	19,317
1992-96	10,913	267	7,282	478	8,027	18,940	306	19,246

[a] Sport fish harvest unknown prior to 1980.

[b] Data are preliminary.

Table 10. Canadian catch of Yukon River fall chum salmon, 1961-1997.

Year	Mainstem Yukon River Harvest					Porcupine River Aboriginal Fishery Harvest	Total Canadian Harvest
	Commercial	Domestic	Aboriginal Fishery	Combined Non-Commercial	Total		
1961	3,276		3,800	3,800	7,076	2,000	9,076
1962	936		6,500	6,500	7,436	2,000	9,436
1963	2,196		5,500	5,500	7,696	20,000	27,696
1964	1,929		4,200	4,200	6,129	6,058	12,187
1965	2,071		2,183	2,183	4,254	7,535	11,789
1966	3,157		1,430	1,430	4,587	8,605	13,192
1967	3,343		1,850	1,850	5,193	11,768	16,961
1968	453		1,180	1,180	1,633	10,000	11,633
1969	2,279		2,120	2,120	4,399	3,377	7,776
1970	2,479		612	612	3,091	620	3,711
1971	1,761		150	150	1,911	15,000	16,911
1972	2,532			0	2,532	5,000	7,532
1973	2,806		1,129	1,129	3,935	6,200	10,135
1974	2,544	466	1,636	2,102	4,646	7,000	11,646
1975	2,500	4,600	2,500	7,100	9,600	11,000	20,600
1976	1,000	1,000	100	1,100	2,100	3,100	5,200
1977	3,990	1,499	1,430	2,929	6,919	5,560	12,479
1978	3,356	728	482	1,210	4,566	5,000	9,566
1979	9,084	2,000	11,000	13,000	22,084		22,084
1980	9,000	4,000	3,218	7,218	16,218	6,000	22,218
1981	15,260	1,611	2,410	4,021	19,281	3,000	22,281
1982	11,312	683	3,096	3,779	15,091	1,000	16,091
1983	25,990	300	1,200	1,500	27,490	2,000	29,490
1984	22,932	535	1,800	2,335	25,267	4,000	29,267
1985	35,746	279	1,740	2,019	37,765	3,500	41,265
1986	11,464	222	2,200	2,422	13,886	657	14,543
1987	40,591	132	3,622	3,754	44,345	135	44,480
1988	30,263	349	1,882	2,231	32,494	1,071	33,565
1989	17,549	100	2,462	2,562	20,111	2,909	23,020
1990	27,537	0	3,675	3,675	31,212	2,410	33,622
1991	31,404	0	2,438	2,438	33,842	1,576	35,418
1992	18,576	0	304	304	18,880	1,935	20,815
1993	7,762	0	4,660	4,660	12,422	1,668	14,090
1994	30,035	0	5,319	5,319	35,354	2,654	38,008
1995	39,012	0	1,099	1,099	40,111	5,489	45,600
1996	20,069	0	1,260	1,260	21,329	3,025	24,354
1997 [a]	7,874	0	1,216	1,216	9,090	4,144	13,234
Average							
1961-86	7,054	1,379	2,539	3,130	10,184	6,222	16,009
1987-91	29,469	116	2,816	2,932	32,401	1,436	29,846
1992-96	23,091	0	2,528	2,528	25,619	2,954	28,573

[a] Data are preliminary.

Table 11. Subsistence and personal use salmon harvest and use in the Yukon River drainage in Alaska, 1961-1997. a,b

Year	Chinook d	Summer chum b		Fall Chum b,c		Coho b,c,d	Estimated Total Use f
		Harvest d	Estimated f Use	Harvest d	Estimated f Use		
1961	21,488	305,317	305,317	101,772	101,772	9,192	437,769
1962	11,110	261,856	261,856	87,285	87,285	9,480	369,731
1963	24,862	297,094	297,094	99,031	99,031	27,699	448,686
1964	16,231	361,080	361,080	120,360	120,360	12,187	509,858
1965	16,608	336,848	336,848	112,283	112,283	11,789	477,528
1966	11,572	154,508	154,508	51,503	51,503	13,192	230,775
1967	16,448	206,233	206,233	68,744	68,744	17,164	308,589
1968	12,106	133,880	133,880	44,627	44,627	11,613	202,226
1969	14,000	156,191	156,191	52,063	52,063	7,776	230,030
1970	13,874	166,504	166,504	55,501	55,501	3,966	239,845
1971	25,684	171,487	171,487	57,162	57,162	16,912	271,245
1972	20,258	108,006	108,006	36,002	36,002	7,532	171,798
1973	24,317	161,012	161,012	53,670	53,670	10,236	249,235
1974	19,964	227,811	227,811	93,776	93,776	11,646	353,197
1975	13,045	211,888	211,888	86,591	86,591	20,708	332,232
1976	17,806	186,872	186,872	72,327	72,327	5,241	282,246
1977	17,581	159,502	159,502	82,771	82,771	16,333	276,187
1978	30,297	171,383	197,144	84,239	94,867	7,787	330,095
1979	31,005	155,970	196,187	214,881	233,347	9,794	470,333
1980	42,724	167,705	272,398	167,637	172,657	20,158	507,937
1981	29,690	117,629	208,284	177,240	188,525	21,228	447,727
1982	28,158	117,413	260,969	132,092	132,897	35,894	457,918
1983	49,478	149,180	240,386	187,864	192,928	23,895	506,687
1984	42,428	166,630	230,747	172,495	174,823	49,020	497,018
1985	39,771	157,744	264,828	203,947	206,472	32,264	543,335
1986	45,238	182,337	290,825	163,466	164,043	34,468	534,574
1987	53,124	174,940	275,914	245,834	245,834	48,603	623,475
1988	46,032	198,806	311,724	155,467	158,694	69,080	585,530
1989	51,062	169,046	249,582	216,229	230,978	41,583	573,205
1990	51,181	117,436	201,839	173,076	185,244	44,641	482,905
1991	46,773	118,540	275,673	145,524	168,890	37,388	528,724
1992	45,626	125,497	261,448	107,602	110,903	51,921	469,898
1993	65,701	106,054	138,867	76,925	76,925	15,772	297,265
1994	54,563	132,494	245,957	123,218	127,586	44,594	472,700
1995	48,934	119,503	221,308	131,369	163,693	28,642	462,577
1996	43,521	103,408	248,856	129,222	146,510	30,510	469,397
Average							
1987-91	49,634	155,754	262,946	187,226	197,928	48,259	558,768
1992-96	51,669	117,391	223,287	113,667	125,123	34,288	434,367

a Includes personal use harvests beginning in 1987. Does not include coastal harvests from Hooper Bay and Scammon Bay.

b Harvests estimated for 1961-1976 because harvests of salmon other than chinook salmon were not differentiated by species until 1977.

c Minimum estimates for 1961-1978 because surveys were typically conducted before the end of the season.

d Salmon harvested for subsistence purposes; does not include usage of salmon from commercial related harvest to produce roe sales.

f Includes salmon harvested solely for subsistence, plus an estimate of the number of salmon carcasses harvested for the commercial production of salmon roe and used for subsistence.

Table 12. Estimates of salmon passage on the mainstem Yukon River using 120 kHz sonar equipment at Pilot Station, 1995-1997.

Year	Dates of Operation	Chinook			Summer Chum	Fall Chum	Coho [a]	Other Fish [b]
		Large	Small	Total				
1995 [c]	6/07-9/03	203,000	37,000	240,000	3,638,000	1,247,000	155,000	620,000
1996 [d]								
1997 [c]	6/06-8/31	130,000	90,000	220,000	1,402,000	622,000	152,000	273,000

[a] Passage estimates for coho salmon are incomplete. The sonar project is terminated prior to the end of the coho salmon run.

[b] Other fish may include pink salmon (which are substantially more abundant in even-numbered years), whitefish, sheefish, northern pike, and other species. These estimates are not total passage estimates but are merely expanded estimates of the number of fish in the acoustical beam.

[c] All chart recording traces of fish were assumed to be travelling upstream, and included in passage estimate calculations.

[d] Operated only for training purposes in 1996.

Table 13. Chinook salmon escapement counts for selected spawning areas in the Alaskan portion of the Yukon River drainage, 1961-1997. [a]

	Andreafsky River			Anvik River		Nulato River			Gisasa River		Chena River			Salcha River		
	East Fork		West Fork	River	Index Area	North Fork	South Fork	Mainstem			River		Index Area	River		Index Area
Year	Aerial	Tower or Weir	Aerial	Aerial [b]	Aerial [b]	Aerial [c]	Aerial	Tower	Aerial	Weir	Population Estimate [m]	Aerial	Aerial [d]	Population Estimate [m]	Aerial	Aerial [f]
1961	1,003			1,226		376 [g]	167		266 [g]						2,878	
1962	675 [g]		762 [g]									61 [g,h]			937	
1963												137 [g]				
1964	867		705												450	
1965			344 [g]	650 [g]											408	
1966	361		303	638											800	
1967			276 [g]	336 [g]												
1968	380		383	310 [g]											739	
1969	274 [g]		231 [g]	296 [g]											461 [g]	
1970	665		574 [g]	368								6 [g]			1,882	
1971	1,904		1,682									193 [g,h]			158 [g]	
1972	798		582 [g]	1,198								138 [g,h]			1,193	1,034
1973	825		788	613								21 [g]			391	352 [j]
1974			285	471 [g]		55 [g]	23 [g]		161			1,016 [h]	959 [h]		1,857	1,620
1975	993		301	730		123	81		385			316 [h]	262 [h]		1,055	950 [j]
1976	818		643	1,053		471	177		332			531	496		1,641	1,473
1977	2,008		1,499	1,371		286	201		255			563			1,202	1,052
1978	2,487		1,062	1,324		498	422		45 [g]			1,726			3,499	3,258
1979	1,180		1,134	1,484		1,093	414		484			1,159 [g]			4,789	4,310 [j]
1980	958 [g]		1,500	1,330	1,192	954 [g]	369 [g]		951			2,541			6,757	6,126
1981	2,146 [g]		231 [g]	807 [g]	577 [g]		791					600 [g]			1,237	1,121
1982	1,274		851						421			2,073			2,534	2,346
1983				653 [g]	376 [g]	526	480		572			2,553	2,336		1,961	1,803
1984	1,573 [g]		1,993	641 [g]	574 [g]							501	494		1,031	906
1985	1,617		2,248	1,051	720	1,600	1,180		735			2,553	2,262		2,035	1,860
1986	1,954	1,530 [k]	3,158	1,118	918	1,452	1,522		1,346		9,065	2,031	1,935		3,368	3,031 [j]
1987	1,608	2,011 [k]	3,281	1,174	879	1,145	493		731		6,404	1,312	1,209	4,771	1,898	1,671
1988	1,020	1,339 [k]	1,448	1,805	1,449	1,061	714		797		3,346	1,966	1,760	4,562	2,761	2,553
1989	1,399		1,089	442 [g]	212 [g]						2,666	1,280	1,185	3,294	2,333	2,136
1990	2,503		1,545	2,347	1,595	568 [g]	430 [g,n]		884 [g]		5,603	1,436	1,402	10,728	3,744	3,429
1991	1,938		2,544	875 [g]	625 [g]	767	1,253		1,690		3,025	1,277 [g]	1,277 [g]	5,608	2,212 [g]	1,925 [g]
1992	1,030 [g]		2,002 [g]	1,536	931	348	231		910		5,230	825 [g]	799 [g]	7,862	1,484 [g]	1,436 [g]
1993	5,855		2,765	1,720	1,526	1,844	1,181		1,573		12,241 [k]	2,943	2,660	10,007 [k]	3,636	3,562
1994	300 [g]	7,801 [p,r]	213 [g]		913 [g]	843	952	1,795 [r]	2,775	2,888 [r]	11,877 [k]	1,570	1,570	18,399 [k]	11,823	11,189
1995	1,635	5,841 [p]	1,108	1,996	1,147	968	681	1,412	410	4,023	9,680	3,575	3,039	13,643 [k]	3,978	3,734
1996		2,955 [p]	624	839	709		100 [n]	756		1,952	6,833	2,233	2,112	7,958	4,866	4,800
1997 [s]	1,140	3,186 [p]	1,510	3,979	2,690			4,766	144 [g]	3,764	13,390 [k]	3,495	3,303	18,396 [k]	3,457 [g]	3,457 [g]
E.O. [t]	>1,500		>1,400	>1,300 [u]	>500 [u]	>800	>500		>600				>1,700			>2,500

continued

Table 13. (page 2 of 2).

[a] Aerial survey counts are peak counts only. Survey rating was fair or good unless otherwise noted.
[b] From 1961-1970, river count data are from aerial surveys of various segments of the mainstem Anvik River. From 1972-1979, counting tower operated; mainstem aerial survey counts below the tower were added to tower counts. From 1980-present, aerial survey counts for the river are best available minimal estimates for the entire Anvik River drainage. Index area counts are from the mainstem Anvik River between the Yellow River and McDonald Creek.
[c] Includes mainstem counts below the confluence of the North and South Forks, unless otherwise noted.
[d] Chena River index area for assessing the escapement objective is from Moose Creek Dam to Middle Fork River.
[f] Salcha River index area for assessing the escapement objective is from the TAPS crossing to Caribou Creek.
[g] Incomplete and/or poor survey conditions resulting in minimal or inaccurate counts.
[h] Boat survey.
[j] Data unavailable for index area. Calculated from historic (1972-91) average ration of index area counts to total river counts (0.90:1.0).
[k] Tower counts.
[m] Mark-recapture population estimate.
[n] Mainstem counts below the confluence of the North and South Forks Nulato River included in the South Fork counts.
[p] Weir counts.
[r] Incomplete count because of late installation and/or early removal of project.
[s] Data are preliminary.
[t] Interim escapement goals. Established March, 1992.
[u] Interim escapement goal for the entire Anvik River drainage is 1,300 salmon. Interim escapement objective for mainstem Anvik River between the Yellow River and McDonald Creek is 500 salmon.

Table 14. Chinook salmon escapement counts for selected spawning areas in the Canadian portion of the Yukon River drainage, 1991-1997.

Year	Tincup Creek [a]	Tatchun Creek [b]	Little Salmon River [a]	Big Salmon River [a,c]	Nisutlin River [a,d]	Ross River [a,f]	Wolf River [a,g]	Whitehorse Fishway		Canadian Mainstem		
								Count	Percent Hatchery Contribution	Border Passage Estimate	Harvest	Spawning Escapement Estimate [j]
1961								1,068	0			
1962								1,500	0			
1963								483	0			
1964								595	0			
1965								903	0			
1966		7 [k]						563	0			
1967								533	0			
1968			173 [k]	857 [k]	407 [k]	104 [k]		414	0			
1969			120	286	105			334	0			
1970		100		670	615		71 [k]	625	0			
1971		130	275	275	650		750	856	0			
1972		80	126	415	237		13	391	0			
1973		99	27 [k]	75 [k]	36 [k]			224	0			
1974		192		70 [k]	48 [k]			273	0			
1975		175		153 [k]	249		40 [k]	313	0			
1976		52		86 [k]	102			121	0			
1977		150	408	316 [k]	77			277	0			
1978		200	330	524	375			725	0			
1979		150	489 [k]	632	713		183 [k]	1,184	0			
1980		222	286 [k]	1,436	975		377	1,383	0			
1981		133	670	2,411	1,626	949	395	1,555	0			
1982		73	403	758	578	155	104	473	0	36,598	16,808	19,790
1983	100	264	101 [k]	540	701	43 [k,n]	95	905	0	47,741	18,752	28,989
1984	150	153	434	1,044	832	151 [k]	124	1,042	0	43,911	16,295	27,616
1985	210	190	255	801	409	23 [k]	110	508	0	29,881	19,151	10,730
1986	228	155	54 [k]	745	459 [k]	72 [n]	109	557	0	36,479	20,064	16,415
1987	100	159	468	891	183	180 [k]	35	327	0	30,823	17,563	13,260
1988	204	152	368	765	267	242	66	405	16	44,445	21,327	23,118
1989	88	100	862	1,662	695	433 [p]	146	549	19	42,620	17,419	25,201
1990	83	643	665	1,806	652	457 [k]	188	1,407	24	56,679	18,980	37,699
1991			326	1,040		250	201 [r]	1,266 [h]	51 [h]	41,187	20,444	20,743
1992	73	106	494	617	241	423	110 [r]	758 [h]	84 [h]	43,185	17,803	25,382
1993		183	184	572	339	400	168 [r]	668 [h]	73 [h]	45,027	16,469	28,558
1994	101 [k]	477	726	1,764	389	506	393 [r]	1,577 [h]	54 [h]	46,680	20,790	25,890
1995	121	397	781	1,314	274	253 [k]	229 [r]	2,103	57	52,353	20,091	32,262
1996	150	423	1,150	2,565	719	102 [k]	705 [r]	2,958	35 [s]	47,955	19,546	28,409
1997 [s]	193	266 [k]	1,025	1,345	277		322 [r]	2,084	24	53,400	15,604	37,796
E.O.												33,000-43,000 [q]

continued

[a] Data obtained by aerial survey unless otherwise noted. Only peak counts are listed. Survey rating is fair to good, unless otherwise noted.
[b] All foot surveys except 1978 (boat survey) and 1986 (aerial survey).
[c] For 1968, 1970, and 1971 counts are from mainstem Big Salmon River. For all other years counts are from the mainstem Big Salmon River between Big Salmon Lake and the vicinity of Souch Creek.
[d] One Hundred Mile Creek to Sidney Creek.
[f] Big Timber Creek to Lewis Lake.
[g] Wolf Lake to Red River.
[h] Counts and estimated percentages may be slightly exaggerated. In some or all of these years a number of adipose-clipped fish ascended the fishway, and were counted, more than once. These fish would have been released into the fishway as fry between 1989 and 1994, inclusive.
[j] Estimated total spawning escapement excluding Porcupine River (estimated border escapement minus the Canandian catch).
[k] Incomplete and/or poor survey conditions resulting in minimal or inaccurate counts.
[m] Estimate derived by dividing the annual 5-area (Whitehorse Fishway, Big Salmon, Nisutlin, Wolf, Tatchun) count by the average proportion of the annual 5-area index count to the estimated spawning escapement from the DFO tagging study for years 1983, and 1985-1989.
[n] Information on area surveyed is unavailable.
[p] Counts are for Big Timber Creek to Sheldon Lake.
[q] Interim escapement objective. Stabilization escapement objective for years 1990-1995 is 18,000 salmon. Rebuilding step escapement objective for years 1996-2001 is 28,000 salmon.
[r] Counts are for Wolf Lake to Fish Lake outlet.
[s] Data are preliminary.

Table 15. Summer chum salmon escapement counts for selected spawning areas in the Alaskan portion of the Yukon River drainage, 1973-1997. [a]

	Andreafsky River			Anvik River		Rodo River	Kaltag Creek	Nulato River			Gisasa River		Hogatza River		Tozitna River	Chena River		Salcha River	
	East Fork		West Fork					South Fork	North Fork [c]	Mainstem			Clear & Caribou Cr.	Clear Creek					
Year	Aerial	Sonar, Tower, or Weir Counts	Aerial	Tower & Aerial [b]	Sonar	Aerial	Tower	Aerial	Aerial	Tower	Aerial	Weir	Aerial	Tower	Aerial	Aerial	Tower	Aerial	Tower
1973	10,149 [d]		51,835	249,015												79 [d]		290	
1974	3,215 [d]		33,578	411,133		16,137		29,016	29,334		22,022				1,823	4,349		3,510	
1975	223,485		235,954	900,967		25,335		51,215	87,280		56,904		22,355		3,512	1,670		7,573	
1976	105,347		118,420	511,475		38,258		9,230 [d]	30,771		21,342		20,744		725 [d]	685		6,484	
1977	112,722		63,120	358,771		16,118		11,385	58,275		2,204 [d]		10,734		761 [d]	610		677 [d]	
1978	127,050		57,321	307,270		17,845		12,821	41,659		9,280 [d]		5,102		2,262	1,609		5,405	
1979	66,471		43,391		280,537			1,506	35,598		10,962		14,221			1,025 [d]		3,060	
1980	36,823 [d]		114,759		492,676			3,702 [d]	11,244 [d]		10,388		19,786		580	338		4,140	
1981	81,555	147,312 [f]			1,486,182			14,348								3,500		8,500	
1982	7,501 [d]	181,352 [f]	7,267 [d]		444,581						334 [d]		4,984 [d]		874	1,509		3,756	
1983		110,608 [f]			362,912			1,263 [d]	19,749		2,356 [d]		28,141		1,604	1,097		716 [d]	
1984	95,200 [d]	70,125 [f]	238,565		891,028								184 [d]			1,861		9,810	
1985	66,146		52,750		1,080,243	24,576		10,494	19,344		13,232		22,566		1,030	1,005		3,178	
1986	83,931	167,614 [g]	99,373		1,189,602			16,848	47,417		12,114				1,778	1,509		8,028	
1987	6,687 [d]	45,221 [g]	35,535		455,876			4,094	7,163		2,123		5,669 [d]			333		3,657	
1988	43,056	68,937 [g]	45,432		1,125,449	13,872		15,132	26,951		9,284		6,890		2,983	432		2,889 [d]	
1989	21,460 [d]				636,906											714 [d]		1,574 [d]	
1990	11,519 [d]		20,426 [d]		403,627	1,941 [d]		3,196 [d,h]	1,419 [d]		450 [d]		2,177 [d]		36	245 [d]		450 [d]	
1991	31,886		46,657		847,772	3,977		13,150	12,491		7,003		9,947		93	115 [d]		154 [d]	
1992	11,308 [d]		37,808 [d]		775,626	4,465		5,322	12,358		9,300		2,986		794	848 [d]		3,222	
1993	10,935 [d]		9,111 [d]		517,409	7,867		5,486	7,698		1,581				970	168	5,400	212	5,809
1994		200,981 [j,k]			1,124,689		47,295			148,762 [k]	6,827	51,116 [k]	8,247 [m]			1,137	9,984	4,916	39,450
1995		172,148 [j]			1,339,418	12,849	77,193	10,875	29,949	236,890	6,458	136,886		116,735	4,985	185 [d]	3,519 [k]	934 [d]	30,784
1996		108,450 [j]			933,240	4,380	51,269	8,490 [d,h]		129,694		157,589	27,090 [m]	100,912	2,310	2,061	12,810 [k]	9,722	74,827 [k]
1997 [q]		51,139 [j]			609,118	2,775 [d]	48,018			157,975	686 [d]	31,802	1,821 [d]	76,454	428 [d]	594 [d]	9,439 [k]	3,968 [d]	35,741 [k]
E.O. [n]	>109,000		>116,000		>500,000				>53,000 [o]				>17,000 [p]					>3,500	

continued

[a] Aerial survey counts are peak counts only, survey rating is fair or good unless otherwise noted.
[b] From 1972-1979 counting tower operated; escapement estimate listed is the tower counts plus expanded aerial survey counts below the tower (see Buklis 1982).
[c] Includes mainstem counts below the confluence of the North and South Forks, unless otherwise noted.
[d] Incomplete survey and/or poor survey timing or conditions resulted in minimal or inaccurate count.
[f] Sonar count.
[g] Tower count.
[h] Mainstem counts below the confluence of the North and South Fords of the Nulato River included in the South Fork counts.
[i] Weir count.
[k] Incomplete count due to late installation and/or early removal of project or high water events.
[m] BLM helicopter survey.
[n] Interim escapement objective.
[o] Interim escapement objective for North Fork Nulato River only.
[p] Consists of Clear and Caribou Creeks interim escapement objectives of 9,000 and 8,000, respectively.
[q] Data are preliminary.

Table 16. Fall chum salmon escapement counts for selected spawning areas in Alaskan and Canadian portions of the Yukon River drainage, 1971-1997.

	Alaska				Canada							
										Canadian Mainstem		
Year	Toklat River [b]	Delta River [c]	Chandalar River [d]	Sheenjek River [d]	Fishing Branch River [f,g]	Mainstem Yukon River Index [g,h]	Koidern River [g]	Kluane River [g,j]	Teslin River [g,k]	Border Passage Estimate	Harvest	Spawning Escapement Estimate
1971					312,800							
1972		5,384			35,125 [n]			198 [p,r]				
1973		10,469			15,989 [s]	383		2,500				
1974	41,798	5,915		89,966 [t]	32,525 [s]			400				
1975	92,265	3,734 [v]		173,371 [t]	353,282 [s]	7,671		362 [r]				
1976	52,891	6,312 [v]		26,354 [t]	36,584			20				
1977	34,887	16,876 [v]		45,544 [t]	88,400			3,555				
1978	37,001	11,136		32,449 [t]	40,800			0 [r]				
1979	158,336	8,355		91,372 [t]	119,898			4,640 [r]				
1980 [ah]	26,346	5,137		28,933 [t]	55,268			3,150		39,130	16,218	22,912
1981	15,623	23,508		74,560	57,386 [w]			25,806		66,347	19,281	47,066
1982	3,624	4,235		31,421	15,901	1,020 [x]		5,378		47,049	15,091	31,958
1983	21,869	7,705		49,392	27,200	7,560		8,578 [r]		118,365	27,490	90,875
1984	16,758	12,411		27,130	15,150	2,800 [y]	1,300	7,200	200	81,900	25,267	56,633 [z]
1985	22,750	17,276 [v]		152,768	56,016 [s]	10,760	1,195	7,538	356	99,775	37,765	62,010
1986	17,976	6,703 [v]	59,313	84,207 [aa]	31,723 [s]	825	14	16,686	213	101,826	13,886	87,940
1987	22,117	21,180	52,416	153,267 [aa]	48,956 [s]	6,115	50	12,000		125,121	44,345	80,776
1988	13,436	18,024	33,619	45,206 [aa]	23,597 [s]	1,550	0	6,950	140	69,280	32,494	36,786
1989	30,421	21,342 [v]	69,161	99,116 [aa]	43,834 [s]	5,320	40	3,050	210 [p]	55,861	20,111	35,750
1990	34,739	8,992 [v]	78,631	77,750 [aa]	35,000 [ab]	3,651	1	4,683	739	82,947	31,212	51,735
1991	13,347	32,905 [v]		86,496 [ac]	37,733 [s]	2,426	53	11,675	468	112,303	33,842	78,461
1992	14,070	8,893 [v]		78,808 [ac]	22,517 [s]	4,438	4	3,339	450	67,962	18,880	49,082
1993	27,838	19,857		42,922 [ac]	28,707 [s]	2,620	0	4,610	555	42,165	12,422	29,743
1994	76,057	23,777 [v]		153,000 [ac,ad]	65,247 [s]	1,429 [p]	20 [p]	10,734	209 [p]	133,712	35,354	98,358
1995	54,513 [ah]	20,587	280,999	235,000 [ac,ad]	51,971 [s,aj]	4,701	0	16,456	633	198,203	40,111	158,092
1996	18,264	19,758	208,170	247,965 [ac,ad]	77,278 [s]	4,977		14,431	315	143,758	21,329	122,429
1997 [ad]	14,511	8,000	199,874	80,423	26,959	2,189		3,350	207	94,725	9,090	85,635
E.O. [af]	>33,000	>11,000		>64,000	50,000-120,000							>80,000

continued

Table 16. (page 2 of 2).

[a] Latest table revision November 3, 1997.
[b] Expanded total abundance estimates for upper Toklat River index area using stream life curve (SLC) developed with 1987-1993 data. Index area includes Geiger Creek, Sushana River, and mainstem floodplain sloughs from approximately 0.25 mile upstream of roadhouse to approximately 1.25 miles downstream of roadhouse.
[c] Estimates are a total spawner abundance, generally from using spawner abudance curves and streamlife data.
[d] Side-scan sonar estimate 1986-1990, split beam sonar estimate 1995-1996.
[f] Located within the Canadian portion of the Porcupine River drainage. Total escapement estimated using weir to aerial survey expansion factor of 2.72, unless otherwise indicated.
[g] Aerial survey count unless otherwise indicated.
[h] Tatchun Creek to Fort Selkirk.
[j] Duke River to end of spawning sloughs below Swede Johnston Creek.
[k] Boswell Creek area (5 km below to 5 km above confluence).
[m] Excludes Fishing Branch River escapement (estimated border passage minus Canadian removal).
[n] Weir installed on September 22. Estimate consists of a weir count of 17,190 after September 22, and a tagging passage estimate of 17,935 prior to weir installation.
[p] Incomplete and/or poor survey conditions resulting in minimal or inaccurate counts.
[r] Foot survey.
[s] Weir count.
[t] Total escapement estimate using sonar to aerial survey expansion factor of 2.22.
[v] Population estimate from replicate foot surveys and stream life data.
[w] Initial aerial survey count was doubled before applying the weir/aerial expansion factor of 2.72 since only half of the spawning area was surveyed.
[x] Boat survey.
[y] Total index area not surveyed. Survey included the mainstem Yukon River between Yukon Crossing to 30 km below Fort Selkirk.
[z] Escapement estimate based on mark-recapture program unavailable. Estimate based on assumed average exploitation rate.
[aa] Expanded estimates for period approximateing second week August through middle fourth week September, using Chandalar River run timing data.
[ab] Weir was not operated. Although only 7,541 chum salmon were counted on a single survey flown October 26, a population estimate of approximately 27,000 fish was made through date of survey, based upon historic average aerial-to-weir expansion of 28%. Actual population of spawners was reported by DFO as between 30,000-40,000 fish considering aerial survey timing.
[ac] Total abundance estimate are for the period approximating second week August through middle fourth week of September. Comparative escapement estimates prior to 1986 are considered more conservative; approximating the period of end of August through middle week of September.
[ad] Data are preliminary.
[af] Interim escapement objective.
[ag] Based on escapement estimates for years 1974-1990.
[ah] Minimal estimate because of late timing of ground surveys with respect to peak of spawning.
[aj] Incomplete count due to late installation and/or early removal of project or high water events.

Table 17. Coho salmon escapement counts for selected spawning areas in the Alaskan portion of the Yukon River drainage, 1972-1997. [a]

Year	Andreafsky River			Kantishna River		Nenana River				Delta Clearwater River [f,g]	Clearwater Lake and Outlet	Richardson Clearwater River
	East Fork	West Fork	Anvik River	Geiger Creek [b]	Barton Creek	Lost Slough	Nenana Mainstem [c]	Wood Creek [d]	Seventeen Slough			
1972										630	417	454 [k]
1973										3,322	551 [f]	375 [f]
1974						1,388			27	3,954 [j]	560	652 [f]
1975						943			956	5,100	1,575 [f, h]	4 [k]
1976			467 [k]	25 [j]		118			281	1,920	1,500 [f, h]	80 [k]
1977			81 [k]	60		524 [k]		310 [b]	1,167	4,793	730 [f, h]	327
1978						350		300 [b]	466	4,798	570 [f, h]	
1979						227			1,987	8,970	1,015 [f, h]	372
1980				3 [j]		499 [k]		1,603 [b]	592	3,946	1,545 [f, h]	611
1981	1,657 [k]					274		849 [n,r]	1,005	8,563 [p]	459 [k]	550
1982				81				1,436 [n,r]		8,365 [p]		
1983				42		766		1,042 [n]	103	8,019 [p]	253	88
1984				20 [j]		2,677		8,826 [n]		11,061	1,368	428
1985				42 [j]		1,584		4,470 [n]	2,081	5,358	750	
1986				5	496	794		1,664 [n]	218 [d,h]	10,857	3,577	146 [k]
1987				1,175		2,511		2,387 [n]	3,802	22,300	4,225 [f, h]	
1988	1,913	830	1,203	159	437	348		2,046 [n]		21,600	825 [f, h]	
1989				155	12 [k]			412 [n]	824 [k]	11,000	1,600 [f, h]	483
1990				211		688	1,308		15 [k]	8,325	2,375 [f, h]	
1991				427	467 [k]	564	447		52	23,900	3,150 [f, h]	
1992				77	55 [k]	372			490	3,963	229 [f, h]	500 [f]
1993				138	141	484	419	666 [n,s]	581	10,875	3,525 [f, h]	
1994				410	2,000 [n,s]	944	1,648	1,317 [n,s]	2,909	62,675 [w]	3,425 [f, h]	5,800 [f]
1995	10,901 [n]			142	192 [n,s]	4,169	2,218	500 [n]	2,972 [k]	20,100	3,625 [f, h]	
1996	8,037 [n]			233	0 [n]	2,040	2,171	2,416 [j]	3,668 [d,h]	14,075 [x]	1,125 [f, y]	
1997 [t]	9,462 [n]			274		1,524 [aa]	1,446	1,464 [j,ab]	1,996 [d,h]	11,525	2,775 [f, h]	
E.O.										>9,000 [u]		

continued

[a] Aerial surveys unless otherwise noted. Only peak counts presented. Survey rating is fair to good, unless otherwise noted.
[b] Foot survey.
[c] Mainstem Nenana River between confluences of Lost Slough and Teklanika River.
[d] Surveyed by F.R.E.D.
[f] Surveyed by Sport Fish division.
[g] Boat survey counts in the lower 17.5 river miles, unless otherwise indicated.
[h] Boat survey.
[k] Poor survey.
[n] Weir count.
[p] Expanded estimate based on partial survey counts and historic distribution of spawners from 1977-1980.
[r] Coho weir was operated at the mough of Clear Creek (Shores Landing).
[s] Incomplete count because of late installation and/or early removal of project.
[t] Data are preliminary.
[u] Interim escapement objective established March, 1993, based on boat survey counts of coho salmon in the lower 17.5 river miles during the period October 21-27.
[w] An additional 17,565 coho salmon were counted by helicopter in the Delta Clearwater outside of the normal mainstem index area.
[x] An additional 3,300 coho salmon were counted by helicopter in the Delta Clearwater outside of the normal mainstem index area.
[y] An additional 350 coho salmon were counted in Clearwater Lake Inlet.
[aa] Survey of western floodplain sloughs only.
[ab] Beginning at confluence of Clear Creek, the survey includes counts of Glacier and Wood Creeks up to their headwaters.

Appendix Table 1. Salmon fishery projects conducted in the Alaskan portion of the Yukon River drainage in 1997.

Project Name	Location	Primary Objective(s)	Duration	Agency	Responsibility
Commercial Catch and Effort Assessment	Alaskan portion of the Yukon River drainage	document and estimate the catch and associated effort of the Alaskan Yukon River commercial salmon fishery via receipts (fish tickets) of commercial sales of salmon or salmon roe.	June - Sept.	ADF&G	all aspects
Commercial Catch Sampling and Monitoring	Alaskan portion of the Yukon River drainage	determine age, sex, and size of salmon harvested in Alaskan Yukon River commercial fisheries; monitor Alaskan commercial fishery openings and closures.	June - Sept.	ADF&G ADPS	all aspects enforcement
Subsistence Catch and Effort Assessment	Alaskan portion of the Yukon River drainage	document and estimate the catch and associated effort of the Alaskan Yukon River subsistence salmon fishery via interviews, catch calendars, mail-out questionnaires, telephone interviews, and subsistence fishing permits.	post-season	ADF&G	all aspects
Sport Catch, Harvest and Effort Assessment	Alaskan portion of the Yukon River drainage	document and estimate the catch, harvest, and associated effort of the Alaskan Yukon River sport fishery via post-season mail-out questionnaires.	post-season	ADF&G	all aspects
Yukon River (Alaskan Portion) Comprehensive Salmon Plan	Alaskan portion of the Yukon River drainage	develop a comprehensive plan for restoration and enhancement of salmon stocks of the Alaskan portion of the Yukon River drainage; define goals and objectives; identify potential opportunities and concerns; recommend appropriate procedures; evaluate priorities.	ongoing	ADF&G, YRDFA, & USFWS	all aspects
Yukon River Salmon Stock Identification	Yukon River drainage	estimate chinook salmon stock composition of the various Yukon River drainage harvests through analyses of scale patterns, age compositions, and geographical distribution of catches and escapements;	ongoing	ADF&G DFO & USFWS	all aspects provides scale samples
		develop and improve genetic stock identification (GSI) techniques for identification of chum salmon harvests to region of origin;		ADF&G DFO & USFWS	all aspects provides samples
		estimate stock compositions of mixed-stock salmon harvests collected in previous years;		USFWS ADF&G	all aspects assisted in Distr. 1 sampling
		investigate the utility of mtDNA, microsatellite, and intron markers in identifying U.S./Canada fall chum salmon stocks; produce draft report.		USGS-BRD USFWS & ADF&G	lead agency in pilot study participating in pilot study
Yukon River Salmon Escapement Surveys and Sampling	Alaskan portion of the Yukon River drainage Nenana River drainage	estimate population size, or index the relative abundance, of chinook, chum, and coho salmon spawning escapements by aerial, foot, and boat surveys; estimate age, sex and size of selected tributary chinook, chum, and coho salmon spawning populations.	July - Nov. Sept.-Oct.	ADF&G TCC/BSFA	all aspects conduct surveys
Lower Yukon Set Gillnet Test Fishing	South, Middle, and North mouths of the Yukon River delta, RM 20	index chinook, summer and fall chum, and coho salmon run timing and abundance using set gillnets. sample captured salmon for age, sex, size composition information.	June - Aug.	ADF&G	all aspects
Mountain Village Drift Gillnet Test Fishing	mainstem Yukon River, RM 87	determine feasibility of using drift gillnets to index timing and relative abundance of fall chum and coho salmon runs.	Aug.-Sept.	Asa'carsarmiut Trad. Council & ADF&G	all aspects implementation with BSFA funding
East Fork Weir, Andreafsky River	mile 20 East Fork RM 124	estimate daily escapement, with age, sex and size composition, of chinook, summer chum, and coho salmon into the East Fork of the Andreafsky River.	June - Sept.	USFWS Yupiit of Andreafsky Algaaciq Tribal Council	all aspects partial funding from BSFA Aug.-Sept.

continued

Appendix Table 1. (page 2 of 3).

Project Name	Location	Primary Objective(s)	Duration	Agency	Responsibility
Yukon River Sonar	Pilot Station, RM 123	estimate chinook, summer and fall chum salmon passage in the mainstem Yukon River.	June - Sept.	ADF&G AVCP BSFA	all aspects partial funding
Anvik River Sonar	mile 40 Anvik River, RM 358	estimate daily escapement of summer chum salmon into the Anvik River; estimate age, sex, and size composition of the summer chum salmon escapement.	June - July	ADF&G	all aspects
Kaltag Creek Tower	mile 1 Kaltag Creek, RM 451	estimate daily escapement of chinook and summer chum salmon into Kaltag Creek; estimate age, sex, and size composition of the summer chum salmon escapement.	June - July	City of Kaltag ACE BSFA	all aspects provided funding
Nulato River Tower	mile 3 Nulato River, RM 486	estimate daily escapement of summer chum and chinook salmon into the Nulato River; estimate age, sex, and size composition of the summer chum salmon escapement.	June - July	NTC ADF&G BSFA	all aspects provide funding
Gisasa River Weir	mile 3 Gisasa River, Koyukuk River drainage, RM 567	estimate daily escapement of chinook and summer chum salmon into the Gisasa River; estimate age, sex, and size composition of the chinook and summer chum salmon escapements.	June - July.	USFWS	all aspects
Clear Creek Tower	mile 0 Clear Creek, Hogotza River drainage, Koyukuk River drainage, RM ~ 780	estimate daily escapement of chinook and summer chum salmon into Clear Creek; estimate age, sex, and size composition of the summer chum salmon escapement.	June-Aug	USFWS BSFA	all aspects
South Fork Koyukuk River Weir	South Fork Koyukuk River near mouth of Fish Creek RM > 1,117	estimate daily escapement of chinook, summer chum and fall chum salmon to the South Fork Koyukuk River estimate age, sex, and size composition of the salmon escapement.	July-Sept.	USFWS	all aspects
Upper Yukon-Porcupine River Radio Telemetry and mark-recapture	mainstem Yukon River, near Rampart, RM 763	evaluate feasibility of using radio-telemetry and mark-recapture in a combined approach to estimate stock composition and timing of fall chum salmon in upper Yukon-Porcupine River drainages.	Aug.-Sept.	USFWS, USGS-BRD ADFG, NMFS, TCC, DFO co-op. project	all aspects
Chandalar River Sonar	mile 14 Chandalar River, RM 996	investigate feasibility of using split-beam sonar equipment to estimate fall chum salmon escapement.	Aug. - Sept.	USFWS	all aspects
Sheenjek River Sonar	mile 6 Sheenjek River, Porcupine River drainage, RM 1,060	estimate daily escapement of fall chum salmon into the Sheenjek River; estimate age, sex, and size composition of the fall chum salmon escapement.	Aug. - Sept.	ADF&G	all aspects
Nenana River Escapement Surveys	Nenana River drainage, above RM 860	aerial and ground surveys for numbers and distrubution of coho and chum salmon in ten tributaries of the Nenana below Healy Creek.	Sept. - Oct.	TCC BSFA	all aspects funding
Tanana Village North and South banks Yukon River Fish Wheels, Test Fishing	Mainstem Yukon River Tanana, RM 695	index the timing of fall chum salmon on the north bank of the Yukon River; and index the timing of chum and coho salmon on the south bank of the Yukon River bound for the Tanana River drainage, using test fish wheels. South bank test fish wheel also used for Toklat CWT recovery.	Aug. - Sept.	ADF&G BSFA	all aspects partial funding
Tanana River Fish Wheel Test Fishing	mainstem Tanana River Nenana, RM 860	index the timing of summer chum, and / or fall chum, and coho salmon runs using test fish wheels.	June - Sept.	BSFA	all aspects

continued

Appendix Table 1. (page 3 of 3).

Project Name	Location	Primary Objective(s)	Duration	Agency	Responsibility
Tanana River Tagging	mainstem Tanana River between RM 793 and 860.	estimate the population size of the Tanana River fall chum salmon run above the confluence of the Kantishna River using mark-recapture methodology;	Aug. - Sept.	ADF&G	all aspects
				BSFA	provided partial funding
Beaver Creek Weir	mile 200 Beaver Creek Yukon River, RM 932	estimate daily escapement of chinook and chum salmon into the upper portion of Beaver Creek.	July - Sept.	BLM	all aspects
Toklat River Radio Tagging	Toklat River, Tanana River drainage, between RM 848-878	evaluate freasibility of using radio telemetry to estimate spawner location and residence time in Toklat spawning areas.	Aug. - Oct.	ADF&G	all aspects
Toklat River Ground Survey	Toklat River, between RM 848 and 853	estimate fall chum spawning escapement in Tolkat Springs and vacinity.	mid-Oct.	ADF&G	all aspects
Toklat River Fall Chum Salmon Restoration Feasibility Study	5-A Test Fish Wheel RM 690 Manley Recovery RM 765 Toklat River Recovery RM 848 Toklat Spawning Ground RM 878	Estimate proportion of Toklat River fall chum salmon return consisting of hatchery reared fish. Estimate the proportion and timing of Toklat River fall chum salmon migrating through and/or harvested in Sudistricts 5-A and 6-A. Estimate the precision of tagged fish homing within the Toklat River springs area.	Aug.-Oct.	ADF&G	all aspects
				BSFA	provided funding for Subdistrict 5-A recovery wheel assistance
Chena River Tower	mile 1 Chena River, Tanana River drainage, RM 921	estimate daily escapement of chinook and summer chum salmon into the Chena River.	July - Aug.	ADF&G	all aspects
Salcha River Tower	mile 2 Salcha River, Tanana River drainage, RM 967	estimate daily escapement of chinook and summer chum salmon into the Salcha River.	July - Aug.	ADF&G	all aspects

Agency Acronyms:

ACE	= Alaska Cooperative Extension
ADF&G	= Alaska Department of Fish and Game
ADPS	= Alaska Department of Public Safety
AVCP	= Association of Village Council Presidents, Inc.
BSFA	= Bering Sea Fishermen's Association
BLM	= Borough of Land Management
CATG	= Council of Athabascan Tribal Governments
DFO	= Department of Fisheries and Oceans (Canada)
NMFS	= National Marine Fisheries Service
NTC	= Nulato Tribal Council
TCC	= Tanana Chiefs Conference, Inc.
USFWS	= United States Fish and Wildlife Service
USGS - BRD	= United States Geological Survey - Biological Resource Division
YRDFA	= Yukon River Drainage Fisheries Association